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# USSR Report

## TRANSPORTATION

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20 April 1984

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TRANSPORTATION**

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MOTOR VEHICLES AND HIGHWAYS

DEPUTY MINISTER ON AZLK EXPANSION, 'MOSKVICH' IMPROVEMENTS

Mostow VECHERNYAYA MOSKVA in Russian 7 Dec 83 p 2

[Interview with Valentin Petrovich Kolomnikov, deputy minister of the Motor Vehicle Industry, by A. Prilutskiy: "'Moskvich': The Plant and the Motor Vehicle"; date and place not specified]

[Text] This enterprise was placed on the capital's industrial map about 50 years ago, and from decade to decade has become an increasingly closed and large "circle".

Valentin Petrovich Kolomnikov, the same age as the AZLK, [Moscow Motor Vehicle Works imeni Lenin Komsomol] and connected with it for his entire working life, has progressed through, without skipping, all the production levels, beginning with foreman, to large-scale operations manager, general director of the association and deputy minister of the Motor Vehicle Industry. With his tall, sturdy build, firm, strong-willed face and gray hair--it is not difficult to picture him at the helm of an ocean liner or the controls of an air liner, calmly and confidently directing his ship.

[Question] A plant is not a ship, but isn't it always at sea ....

[Answer] This can be said about AZLK not only in the figurative sense, but also in the literal sense. It sprang up in the 1930's outside the Krest'yanskaya Gate, and at the beginning of the 70's moved the main site to the southeast, in Tekstil'shchik. Transferred here were the "headquarters" and the main wings and the settlement for the motor vehicle builders in the social-cultural project zone, with a Palace of Culture, a stadium, covered ice rink, a swimming pool ....

Movement and speed, symbols of which the motor vehicle has become in our time, are compulsory for any enterprise. In them is a pledge of stability and the possibility of reorganizing without stopping, without losing the pace and without letting rivals get ahead. On the "Moskvich" path there were years when it kept in the background, but then, in the 60's, it moved out in front, with a spurt and quite astonished the world with the skilful, high-quality work of its builders. Then, however, it slowed down, and was inferior with respect to technical data, dynamics, fuel input and comfort to its motor vehicle competitors.

But now a new acceleration is beginning which will enable the plant and the motor vehicle to advance at an increasing rate at least to the end of the century.

[Question] And so, if we keep to driving terminology, "Moskvich" has now switched on the turn signal, and is beginning to overtake.

[Answer] The present five-year plan is becoming like an acceleration zone: after several years failure, the rates have increased steadily, the two-year plans have been fulfilled and with any luck we hope to complete the third as well. At the same time there has been a speeding up of the modernization tempo of AZLK and of other enterprises in the association. Work on a new "Moskvich" model has entered the concluding stage, and in the 12th Five-Year Plan it will begin to roll off the plant conveyer.

Within three years two large wings should be erected here, in Tekstil'shchiki, and a number of projects at the affiliate branches, and the shops at the old site should be fundamentally altered. At this base, on the basis of flexible technology, which permits rapid reorganization for the output of the new item, the production of the "Moskvich-2141" will also be set up. The USSR Council of Ministers proposal on this, as is known, was approved by the CPSU Central Committee Politburo.

[Question] What is "flexible technology"? What changes will it introduce in the process of building motor vehicles?

[Answer] All right, let's try to look in on one of the future plant shops. Its equipment consists of automated readjusted lines, machine tool units with an electronic "bridge", robots—welders, assemblers, painters.... You will envy the people who will start controlling this equipment!

Business organization will ascend to a new stage, productivity will increase considerably, and of course, the quality, which is still censured quite a bit, will improve.

Flexible technology will make it possible to react quickly to demand and market conditions, on the foreign market as well—with the new model we earnestly count on recovering the positions once won by the former "Moskvich". By rapidly rebuilding the equipment, particularly the welding equipment, we can produce, at the same time as the basic model, its various modifications—minibuses, for example, vans, and even small trucks, that is to come out on the market with a wide range of motor vehicles.

[Question] The "Moskvich-2141" has successfully passed its tests. What kind of car is it?

[Answer] Our designers have striven to retain and to develop in it the best features which have made Moscow low-liter-capacity vehicles famous—reliability, unpretentiousness, economy, while having added to this comfort, very careful attention to the finishing and well-thought out designer

solutions for the interior and exterior. In general, it will be a modern front-wheel drive passenger vehicle, included in the third small class group, in other words, occupying an intermediate position between the "Volga" and the "Zhiguli". At the same time, even better, it is 15 percent more economical.

The technical documentation is ready, and manufacture of the equipment has begun. Hundreds of contractors will work in cooperation with us, including those from the member countries of the SEV [Council for Mutual Economic Aid]. They too have a great deal of work facing them.

[Question] Shops are being constructed and unique equipment is being designed for the new motor vehicle. But the people? What is happening for them?

[Answer] The social part of the program has been drawn up, I would say, on a grand scale, and is being implemented at advanced rates. The plans for yearly construction of 30,000 square meters of housing each here, in Tekstil'shchiki, in Lyublina, Pechatniki....Ten child care centers will be built, two young pioneer camps have opened in the Moscow suburbs and two dispensaries plus a boarding school in the Crimea.

Of particular concern are the labor forces and vocational training for those who will work in the new shops. We are expanding the vocational and technical schools and are building one more--about 2000 workers will study in them each year, and we are counting greatly on their youthful fervor. We are planning to establish a branch of the plant higher technical education institution, and then a VUZ as well. The specialties are most modern: electronics, robot equipment and laser techniques.

We can name as our true Guards our veteran personnel--experienced, educated, highly intelligent masters of their trade, dedicated to AZLK and to our common child--"Moskvich".

The multi-thousand detachment of Party workers-motor vehicle builders are working actively and purposefully, and head the work on all projects for modernization and preparation for the output of the new motor vehicle.

For the present it exists in several samples, but the numbers are changing rapidly on the speedometer of time. The time is approaching when the conveyor will start moving and rolling off of it, shining, will be our cars with our proud name--"Moskvich".

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## MOTOR VEHICLES AND HIGHWAYS

### MORE ON PLANNED ZIL MOTOR VEHICLE WORKS EXPANSION

Moscow MOSKOVSKAYA PRAVDA in Russian 22 Jan 84 p 1

[Article: "Shops at Various Levels"]

[Text] Construction has begun on two new wings at the Motor Vehicle Plant imeni I.A. Likhachev.

The simile became a common one long ago: Zil is like a whole city. Tens of thousands of workers bear the honored and proud name of "Zilovites" [Zil workers]. Even for such a large enterprise, however, the construction of two new wings is an important event. Their erection is a stage in the biography of the motor vehicle giant, connected with the transition to the output of new truck models with diesel engines. The production of these vehicles is outlined for development in 1984-1988 on the basis of introducing modern industrial and engineering equipment.

Zil's huge territory fitted easily on the architect's ordinary drawing board. On the mock-up, alongside the old plant wings, which once seemed gigantic--up to 15 meters high, the new multi-storied structure extended. By using the plan, one can make a trip into the future plant complex.

We are at the central entrance passage from the direction of Avtozavodskaya Street. The sixty-meter side facade of the new body-shop wing rises over the old buildings, built in the 30's according to the plan of the famous architects the Vesninyy Brothers. The need to "stretch" the new structure upwards stems from the fact that the section here is tightly cramped between existing old structures. The designers found a successful, expressive solution--the parts of the new building will be placed "in steps". The lower one is the administrative and everyday addition. It is separated from the main plant road passing next to it by a strip of greenery and repeats the irregular line of the road. Located in this block are laboratories, recreation rooms, every-day rooms and showers. The next "step" is the basic production floor--assembly shops, and above them--the paint sections. The roof has two levels, and the projection is led off under the ventilation chambers. Automated machines, robot equipment and modern equipment occupy their own place in the light, spacious shops.

To get to the other new structure--the molding-welding wing, which is located at the back of the plant city, it is best to use the bus. On the mock-up, this wing is a one-story flat rectangle. But you begin to surmise the true scale of the structure when you realize, for example, that this scarcely noticeable small door is the "gate" for the railroad stock. Cars with metal will be delivered along the spur straight into the shop.

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## MOTOR VEHICLES AND HIGHWAYS

### FEATURES OF NEW KAZ-4540, URAL-5557 TRUCKS FOR AGRICULTURAL USE

Moscow IZVESTIYA in Russian 24 Jan 84 p 1

[Interview with A. Titkov, management chief of design and experimental work of the Ministry of the Motor Vehicle Industry, by V. Popov: "A Motor Vehicle for the Village"; date and place not specified]

[Text] Management Chief of Design and Experimental Work of the Ministry of the Motor Vehicle Industry A. Titkov answers the questions of an "Izvestiya" correspondent.

[Question] Trucks transport a considerable part of all the national economic goods. The improvement of agricultural transport service is particularly important. In accordance with the USSR Food Program, in the present five-year plan capacities should be constructed to produce 20,000 tandem trailer trucks a year for agricultural purposes at the Kutaisi Motor Vehicle Plant, as well as 10,000 high-off road capability motor vehicles at the Ural Motor Vehicle Plant. How will this problem be solved?

[Answer] I shall begin with the fact that essentially all the future trucks will have diesel engines.. They are 25-30 percent more economical than gasoline engines.

Another important direction is the wide-scale use of tandem trailer trucks instead of single trucks. In the rural areas this will achieve a productivity rise by almost half. At the same time the fuel input will be reduced 1.5-fold, and the net costs of the transport operations will be lower.

[Question] What is it like, today's "rural" motor vehicle? How, strictly speaking, does it differ from the "city" vehicle that we are used to?

[Answer] Agricultural-type motor vehicles operate under more difficult conditions. Their designs are being worked out in creative collaboration with specialists from the USSR Ministry of Agriculture, USSR Goskomsel'khoztekhniki [State Committee for the Supply of Production Equipment] and other departments of the agroindustrial complex.

In consideration of their requirements, this motor vehicle should above all have greater off-road capability, but at the same time should disturb the soil structure less. This is achieved by large wide-section tires which will make it possible to cut in half the pressure on the soil as compared with ordinary

truck wheels. A second quite important factor: the vehicle should have a wide speed range--from 2-3 kilometers an hour in the field to 70-75 on the highway. This feature, on the one hand, makes it possible for the vehicle to operate successfully in a unified industrial cycle with various harvesting combines and, on the other hand take the products gathered to the threshing floor, storages and warehouses rapidly.

[Question] What is the new truck, produced in Kutaisi, like?

[Answer] Well, the KAZ-4540 vehicle is interesting. Essentially, however, it is a tandem trailer truck, consisting of a double-axle, all-wheel drive, dump truck-tractor with a load capacity of 5.5 tons and a dump-trailer with the same load capacity.

The vehicle's design is the fruit of the creative collaboration of scientists from NAMI [Central Scientific Research Institute of Motor Vehicles and Motor Vehicle Engines] and Georgian motor vehicle builders. A 155-horse power motor was designed at the Yaroslavl' "Avtodizel'" Association. They helped to make truck-trailers at the main trailer design department (Balashov). Supervisors from KamAZ [Kutaisi Motor Vehicle Plant] are now helping the Kutaisi workers to master the production. Thus, through combined efforts, a tandem trailer truck has been designed which, with respect to the basic technical-economic parameters, is on a par with the best foreign analogs, and with respect to off road capability, surpasses them.

The first vehicles were assembled at KAZ on New Year's Eve. Now the plant is beginning series production of them.

Large wings are being erected in Kutaisi for the new motor vehicle. Strictly speaking, this will actually be one more plant on the site of over 20 hectares.

[Question] The motor vehicle builders at Miass recently turned out the first experimental batch of "Ural-5557" rural cross-country vehicles. What can be said about this innovation?

[Answer] Here are a few figures that indicate, so to speak, the Ural nature of the vehicle: it has a diesel, 210 horse power engine. Its load capacity is seven tons. Coupled with a trailer it easily hauls 14 tons. The ten-speed gear box, combined with the distributor box, makes it possible to pick up speed from 2 to 18 kilometers an hour and operate in unison with harvesting machines.

Taking into consideration the wishes of the agricultural machine operators, the designers tried to ease the driver's work to the maximum. On this motor vehicle the steering is supplied with a hydraulic booster, the spare wheel is also put on by means of a hydraulically operated jack and the dump platform gates are opened and closed automatically. The cab is equipped with a powerful heating and ventilating system and conveniently adjustable seat. The designers provided for installation of a pre-start-up heater to assist in starting up the motor during any frost.

[Question] When will series production of these cross-country vehicles start?

[Answer] It has, strictly speaking, begun. The first 100 vehicles will already be actively participating in the coming spring in the sowing season. After that the output of the vehicles will gradually increase in order to fulfill without fail the task specified by the USSR Food Program.

I have spoken of only two new designs for rural motor vehicles. But a total of 76 are already being turned out in the sector, and by the end of the present five-year plan about another 25 models of agricultural-purpose vehicles will be developed.

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MOTOR VEHICLES AND HIGHWAYS

BRIEFS

REPAIR PLANT IMPROVEMENTS--Birobidzhan--The builders of the Baikal-Amur Railway received a lot of dump trucks which had undergone extensive repairs at the Birobidzhan motor vehicle repair plant. The number of vehicles ready for further use has risen one and a half times this year, such is the result of bringing into operation a second line of plants. The plant has gone from modular to unified repair of large-load dump trucks. Now incoming vehicles are disassembled completely on the lines, not partially as before, and assembled from new and rebuilt assemblies. The launching of the second line has permitted the beginning of quantity production of mobile fitting shops, special vans, and comfortable, removeable units used for transporting crews. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 8 Jan 84 p 1] 12461

ROAD NETWORK GROWS--Ulyanovsk, 9 Jan--Thirty more kolkhoz and sovkhoz farms have been linked with oblast and rayon centers by asphalt concrete roads. Several days ago construction was completed on the last of them, with a length of 35 kilometers. The road reached the remote sovkhozes Astradamovskiy, Kuvayskiy, and others. In Ulyanovsk Oblast in recent years 388 kilometers of paved internal farm roads were put into use in all, including 220 kilometers of asphalt concrete road. In the next 2 to 3 years, all the central kolkhoz and sovkhoz settlements in the oblast will have a reliable connection with the city of Ulyanovsk and with rayon centers. [By M. Belousov, external correspondent for SEL'SKAYA ZHIZN'] [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 10 Jan 84 p 2] 12461

TUNNEL THROUGH CAUCASUS RANGE--Dzhava, South Osetian Autonomous Oblast (TASS)-- In the midst of the mountains, crews of tunnelers from the Tbilisi and Ordzhonikidze tunnel building directorates met at an altitude of 2,000 meters. In the depths of the main Caucasus range the connection of the Rokskiy tunnel went through--the most important objective of the Transcaucasus highway, which is under construction. Simultaneously with the concreting of the main underground corridor, construction of the bed of the future road is going on at a brisk pace on both sides of the Caucasus range. It is difficult to overestimate the significance of the new highway for the mountain rayons of the south of the Russian Federation and the Transcaucasus. Because of snowfall, icy conditions, and avalanches, the Military-Georgian road now in use is closed for several months out of the year. The new highway will permit the complete resolution of the transportation problem in the mountains, will shorten the trip

from the Transcaucasus to the RSFSR by 500 kilometers, and will speed up and reduce the cost of delivering freight. The builders plan to put the road into service during the third quarter of next year. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 26 Jan 84 p 1] 12461

COMPLETION OF CAUCASUS TUNNEL--North Osetian ASSR--The main tunnel passage of the Transcaucasus highway has gone through. When the narrow transport-ventilation tunnel pierced the stony heart of the Caucasus 3 years ago, the construction of the parallel wide main automobile passage lagged behind by 700 meters. The last 300-400 meters in the mountain rock had to be broken through as if it was the bottom of the sea. Floods of icy water forced the heavy perforator rods out of the holes, and destroyed the seemingly indestructible stone walls and arches of the tunnel. It was a battle for every meter. At last the final charges were laid. After the explosion the settling rock revealed under the very arch a yawning black gap: the northern Caucasus and the Transcaucasus came together in the very center of the range at an altitude of 2,114 meters above sea level. Even bigger tunnels are known. One of them is being built now on the Baikal-Amur Railway. This tunnel will be more than three times longer than the Rokskiy tunnel, but among motor vehicle tunnels, the Rokskiy tunnel has no equal in terms of the altitude of the road bed. The construction of the whole Transcaucasus highway is indeed unique. This sky-high road is only a little more than 100 kilometers long, but almost all of it is at an altitude of 1,500 to 2,000 meters above sea level. When will the Transcaucasus highway be opened to regular traffic? It is stipulated in the plan that the construction of the Caucasus pass motor vehicle road be completed in the 11th Five-Year Plan. [By A. Podol'skiy] [Excerpts] [Moscow SOVETSKAYA ROSSIYA in Russian 28 Jan 84 p 3] 12461

NEW TRUCK PRODUCED--At the Kremenchug motor vehicle plant, production of a new truck, the KrAZ-250, has begun. The new vehicle differs from its predecessors in improved performance and economy. It has a greater load-carrying capacity and speed. The three-seat cab of the KrAZ-250 resembles the interior of a passenger car. The driver's seat is anatomically designed and adjustable. The controls and instruments are arranged in accordance with the latest recommendations of ergonomics. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 9 Feb 84 p 4] 12461

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## RAIL SYSTEMS

### RAILWAYS ADMINISTRATION REVIEWS 1983 PERFORMANCE, TASKS SET BY PARTY PLENUM

Moscow GUDOK in Russian 20 Jan 84 pp 1-2

[Article under the heading "In the Ministry of Railways Collegium and Trade Union Central Committee Presidium": "Responsible Tasks, High Frontiers"]

[Text] As was already reported in GUDOK, an expanded joint meeting of the Ministry of Railways Collegium and the central committee presidium of the trade union of workers in railroad transport and transport construction was held on 17 January in Moscow, with the participation of the chiefs of railroads and a number of railroad divisions, subways, Promzheldortrans associations, leaders of scientific research and academic institutes, and the party and trade-union aktiv of the Ministry of Railways.

A report on the tasks of rail transport workers in light of the resolutions of the December (1983) CPSU Central Committee Plenum, whose evaluations and conclusions were contained in a speech at the plenum by Comrade Yu. V. Andropov, was given by N. S. Konarev, the Minister of Railways.

Speaking at the meeting was CPSU Central Committee Politburo member and First Deputy Chairman of the USSR Council of Ministers G. A. Aliyev.

Also speaking at the collegium meeting were the following railroad chiefs: I. L. Paristy (Moscow), A. S. Goliusov (South-eastern), I. A. Yemets (Baltic), A. M. Kozhushko (Donetsk), A. P. Platonov (Azerbaijan), A. G. Andreyev (Belorussian), N. P. Ovsyanik (Tselin), A. F. Basov (Gorkiy) and B. S. Olynyk (Southwestern); rector V. P. Zhukov of Rostov Rail Transport Engineers Institute, Kiev Subway chief S. P. Kapitanyuk, Ministry of Railways Main Computer Center chief G. S. Ivannikov, Ministry of Railways Main Workers Supply Administration chief G. P. Chernykh, and N. I. Kovalev, central committee chairman of the trade union of workers in rail transport and transport construction.

The collegium and trade union central committee presidium listened to explanations on shortcomings permitted by these railroad chiefs A. S. Petrov (October), F. M. Kotlyarenko (Northern Caucasus), K. D. Kobzhasarov (Alma-Ata), G. Ya. Pisarev (Volga), A. M. Kadyrov (Central Asian).

Communists and all the Soviet people perceived the resolutions of the December Party Central Committee Plenum, the text of the speech at it by Comrade Yu. V. Andropov and the documents of the Ninth Session of the USSR Supreme Soviet as a fighting program of struggle for the attainment of new and higher frontiers in developing the economy and strengthening the might of our homeland. The Plenum stressed the importance of not losing the tempo, the overall positive attitude towards this work, of actively developing positive processes. The ways of attaining this goal have been precisely formulated. They are: raising the level of management and of party and state leadership of the economy, accelerating scientific and technical progress, using more effectively the country's mighty production potential, its material, labor and financial resources, seeking out new reserves, and greater stress on economizing.

The task set at the Plenum was to ensure unconditional plan fulfillment and use of all opportunities for overfulfillment. All economic activity, socialist competition, economic, organizational and ideological education work must be aimed at its resolution.

The large role of rail transport and its workers in successfully actualizing party plans was noted in the report and speeches at the expanded meeting of the Ministry of Railways collegium and trade-union central committee presidium. It was emphasized that successful fulfillment of the plan for the fourth year of the five-year plan by the entire national economy will depend in very large measure on the precise, smooth, uninterrupted operation of the nation's transport complex, and foremost on the key link in it, rail transport.

The CPSU Central Committee has constantly paid considerable attention to developing and improving the operation of rail transport. A little more than a year ago, at the November (1982) CPSU Central Committee Plenum, the activity of the Ministry of Railways and the work of rail transport were harshly criticized. The CPSU Central Committee Politburo and the USSR government were upset that rail transport indicators had been deteriorating year after year and that the national economy's shipping requirements were not being fully met. Serious shortcomings in the organization of train traffic and in locomotive operation and repair were pointed out, and it was noted that the considerable capital investment in the branch had not yielded the necessary impact.

Railroad workers correctly perceived this criticism and, importantly, drew the appropriate conclusions from it. The restructuring of work style and methods, the change in attitudes towards work and the plan, the greater demandingness and responsibility, and strengthened discipline have been yielding positive results.

Rail transport has coped successfully with the main 1983 assignments and has, for the first time in many years, carried out the national economic plan ahead of schedule. Some 63.6 million tons of national-economic freight above the plan was hauled. The productivity of locomotives and cars rose, as did traffic speed and train weight. The entire increment in shipment volume was mastered through labor productivity growth. Upwards of 440 million rubles in above-plan profit was obtained. In 1983, rail workers made a worthy contribution to implementing the economic and social development for the country as a whole.

All this is gratifying and creates confidence among rail workers in their abilities. But this is only the start of the considerable work facing them in accord

with the demands of the Party Central Committee and Soviet Government. These are only the first results, which must be secured and multiplied.

A new year, 1984, has begun. Much creative work is perking at the plants, factories, kolkhozes, sovkhozes and construction sites, resulting in millions and millions of tons of planned and above-plan freight which the railroads must haul. Railroad workers view fulfillment of the 1984 plan and socialist obligations not only as a civic duty, but also as a patriotic duty.

This year, railroad transport plans to master a freight turnover of 3.65 trillion ton-kilometers and passenger turnover of 366 trillion passenger-kilometers, the shipment of 3.885 billion tons of freight and a 1.8 percent rise in labor productivity.

Extremely taut assignments. But they must be considerably exceeded. In fact, we are faced with hauling not only all the planned output, but above-plan output as well, with carrying out the party order to increase labor productivity one percent above the planned level and lower shipment net cost by another 0.5 percent. In general, we need to reach the frontiers set at the 14 July 1983 expanded meeting of the Ministry of Railways collegium. These were discussed in detail in GUDOK.

In order to reach the planned goal of hauling 3.9 billion tons of freight per year, we will need to ship out at least 10.656 million tons daily. In 1983, we managed to achieve this only four months out of 12. It is even more difficult to reach the planned level of labor productivity. In order to do this, freight turnover will have to be increased by 115-120 billion ton-kilometers, the equivalent of adding the annual work load of a road like the Southeastern or Volga.

The high frontiers planned can be reached only by mobilizing all resources, all reserves. And we must first of all achieve a situation in which each railroad, each division and each enterprise is stable from the start of the year in meeting its plan and socialist obligations.

The 1983 shipment plan as a whole was overfulfilled, but the assignments were not met for the entire products list. Large amounts of lumber and cement were not shipped. In 1984, this situation must be corrected and the established products list strictly followed.

The shipment rhythm is also important. It sometimes happens that some types of freight are not hauled for a certain period, and enterprises and even branches of the national economy experience great difficulties. The railroads then make up the shipments, and their reporting shows everything to be in order, but in fact, time has been lost, and the enterprises cannot always make it up. A delay of two or three days throws industrial enterprises and agricultural organizations off stride and disrupts the construction tempo at important projects. It is the duty, the direct obligation, of railroad workers to ensure the uninterrupted, prompt delivery of the entire products list of freight.

Shipment success depends largely on the efficient use of throughput capacity. The level of car-flow transfers is very important in this regard. This past year, it was 16,800 cars per day below the average monthly technical plan norms.

This is the equivalent of losing 300,000-350,000 tons of loading resources daily. On the October, Northern Caucasus, Volga, Alma-Ata, Central Asian, Transbaykal and Western Kazakhstan, total yearly loading losses due to nonfulfillment of transfers as per the technical plan were 55 million tons. We can no longer accept such mismanagement. We need to achieve the transfer of 380,000 cars per day, and up to 400,000 in certain periods. This is a very major reserve, and it must be brought into play.

Particular attention should be paid to the operation of line intersections, junctions and stations. Train flows have constantly been slowed of late on the Northern Caucasus and Transcaucasus, and train passage has systematically been delayed on the Alma-Ata, Central Asian, Western Kazakhstan and Volga. There are major complications in the acceptance of car flows by the October from its neighbors. The network is a single organism, and if some division or line slows the flow of cars, the efforts of its neighbors are often reduced to naught and there are interruptions on entire lines.

Things need to be set up in such a way that no one gets in the habit of fencing himself off from his neighbor, of damaging the overall work of the network. Observance of the principle of open junctions will become a measure of the maturity of our commanders.

Large reserves can be brought into play by improving the work of junctions and stations. A car now spends more than two-thirds of its time at freight and technical stations and less than one-third in travel. Is that really business-like, when one in every 10 trains left the station an average of an hour behind schedule in 1983, and even one in every seven from the Leningrad classification yard?

Many large junctions are operated unstably. Thus, the Sverdlovsk classification yard had delays of almost two hours each for 70 trains a day last year. Receiving delays increased at Chelyabinsk and Dym. This situation must be resolutely corrected.

The meeting sharply posed the question of locomotive use. Many commanders attempted to explain the disruptions in car transfers and traffic by a shortage of locomotives. At the same time, the use of tractive equipment improved little, if any, in 1983 for both the network as a whole and for a majority of the roads. It even deteriorated on some roads. The losses this caused transport are enormous. Hundreds of locomotives were taken out of operation. Calculations show that shipment volume was reduced by 25,000 cars per day due to poor use of tractive equipment.

Locomotives are currently operating 10-12 hours a day. This is 600-720 minutes. It stands idle the rest of the time. At one time, leading collectives on the Western Siberia competed for 1,000 km of average daily run and 1,000 minutes of useful electric locomotive operation per day. And it is apparently time to resurrect this competition to be "thousanders," to broaden its scope.

Unsatisfactory use of tractive equipment leads to gross violations of working and rest conditions for engineers and their assistants. During a year, many thousands of violations of the time established for continuous work by locomotive crews are permitted. The trade-union organizations are often reconciled to this mess. The trade-union collegium and central committee have demanded a

very resolute struggle against such an attitude towards workers in a leading transport occupation, towards people on whom train traffic safety largely depends.

Failure to follow freight train schedules leads to considerable losses. These have been especially high on the Southern Urals, Volga, Kuybyshev, Gorkiy and Northern Caucasus. Following schedules is an important indicator of technological discipline, which must be up to the mark.

In order to successfully master the growing shipment volumes, we need to reach the leading practical world standards of average train weight. The calculations and experience of collectives at Gudermes Depot on the Groznenskiy Division and on the Tselin and Moscow roads and that of our best engineers testifies to the fact that it is possible, using the same total siding length and same number of locomotives, to not only raise the average weight of the trains, but to significantly exceed the planned frontier as well.

All roads and divisions, depots and stations, without exception, must undertake the radical restructuring of the technology and ensure the large-scale marshalling and movement of heavy and superheavy trains. It is estimated that increasing average train weight by 100 tons would provide the network with an opportunity to ship out approximately 100-120 million tons more output.

Increasing train weight will be facilitated in considerable measure by reducing the number of empties hauled and increasing static load. Thus, given a one-percent reduction in the number of empties hauled, average train weight could be increased by 25 tons. Increasing static load by 300 kg would add 15 tons. Eliminating short-weight and short-length trains on all roads would increase the average weight by 10 tons.

Thus, there are considerable reserves in operations, and they must be used to successfully meet the assignments of the five-year plan.

The report and the speeches paid much attention to improving equipment reliability, an indispensable condition to meeting the shipment plan successfully. In 1983, we managed to lower the percentage of inoperable electric and diesel locomotives and to reduce machinery downtime for repairs. The track overhaul plan was met in full. The number of warnings for underspeed dropped. More cars were overhauled than in preceding years. Electrical, signalling and automatic braking equipment operated more reliably. At the same time, as the meeting noted, we have still not succeeded in eliminating serious shortcomings in equipment maintenance and repair.

Last year, workers in the locomotive system were set the task of putting at least a thousand diesel locomotive sections more into operation by improving maintenance, by improving locomotive repair quality and speed. In fact, considerably fewer were added. Perhaps the assignment was unrealistic? Calculations and the experience of the best locomotive depots -- Grebenko, Solvychegodsk, Zhmerinka -- show that it would have been quite possible to have added 1,000 diesel freight locomotive sections to the operating fleet in a year. This means we need to take up seriously, in a business-like manner, the introduction of advanced repair technology at all depots, without exception, and to achieve a decisive improvement in repair quality. We should also be concerned about using freight locomotives less

for auxiliary work. About 150 locomotives are diverted for these purposes every day.

More disquieting is the state of affairs in the car system. Each day, some 500-600 trains are not dispatched as scheduled from classification yards due to car damage. And some 700 trains are held up en route for the same reason. Hundreds of cars stand unrepainted in depot shops.

Industrial enterprises, in support of the remarkable initiative by Muscovites, repaired more than 725,000 cars in 1983. The result of a valuable initiative!

The situation with regard to safeguarding the car fleet is alarming. This past year, 80,000 cars were damaged in stations, on sidings and at ports. Effective, resolute steps are needed to prevent a careless attitude towards scarce rolling stock, and the guilty must be prosecuted as severely as possible.

Complex tasks face workers in the track system. In 1984, they must increase output per hour of "window" by at least five percent and must reduce by at least that much the number of warnings for underspeed. Work mechanization, especially in routine track maintenance, is the most effective means for improving the working conditions and increasing the labor productivity of track workers, and of reducing the number of workers.

The work of rolling stock repair and spare parts production facilities was sharply criticized. The poor quality of locomotive and car rehabilitation, slow increase in production volume, and poor production specialization and cooperation, were pointed out.

The meeting stressed once again that passenger shipments occupy a very special place in railroad transport. Workers judge the work of our railroaders by how the passenger trains run. In May of last year, a joint meeting of the Ministry of Railways collegium and trade-union central committee presidium specified steps aimed at fundamental improvement in passenger shipments. In 1983, the passenger-turnover plan was met for the first time in recent years, car use improved, and the volume of services rendered the populace in terminals and on trains increased somewhat. However, we did not manage a decisive advance in the organization of passenger shipments. There are still many justified complaints, especially concerning schedules not being followed.

Thousands of long-range, local and suburban trains are late. We still need better bedding quality, better passenger services and cleaner cars. The serious abuses of ticket-sales organization are still with us. Incorrect information on available seating is often given out. Many passengers still ride without tickets. All this is being done in plain sight. In many places, restaurant cars are being set up poorly for runs. There have been cases of extremely poor restaurant car maintenance quality.

Both the report and the speeches at the meeting emphasized that the elimination of shortcomings and miscalculations, the bringing of exemplary order to everything connected with passenger services, is a matter of honor for railroad workers. Everything possible should be done to develop competition for high service quality in terminals and on trains, to introduce more energetically the experience of leading workers, to strengthen educational work among railroaders directly associated with passenger shipments.

The situation regarding train safety in transit is disturbing. Concern for safe transport means concern for the lives and health of people using its services, for protecting the huge amounts of material goods being moved by rail, and, finally, it means concern for the smoothness with which the shipping conveyor operates. This past year, a significant number of cars and locomotives were damaged in accidents, costing the state millions of rubles. And it should be added that there were high losses due to interruptions in train traffic. Many instances of gross damage were permitted due to poor track maintenance, ignoring stop signals, cars in disrepair, and so on.

The Ministry of Railways collegium and the trade-union central committee presidium pointed out that the leaders of a number of roads were irresponsible with regard to ensuring traffic safety. The inspector apparatus has been granted additional rights, and a simultaneous increase in its responsibility has also been anticipated. However, not all workers in the inspector apparatus are aware of this. In order to guarantee complete traffic safety everywhere, we need a party-minded, exacting approach to this work and precise organizational work by all commanders, from brigade leader to road chief, and by the entire inspector apparatus. Accident-free work methods should be generalized and made accessible to all. We do have quite a few subdivisions which maintain their systems in excellent condition, maintain high discipline and, on that basis, ensure precise, uninterrupted operation. This means we have an example to follow and equal.

Each commander must be aware that the level of discipline is determined not by the number of fines, but by successful plan fulfillment and by ensuring precise, reliable operation. High discipline on the steel mainlines is the basis of everything else. Rail transport is simply inconceivable without firm, genuinely iron discipline. This past year, quite a bit was done to strengthen it. But much work still remains. In the course of it, one should rely on the Law of Labor Collectives. This important document outlines a great deal which can be done to improve the activity of labor collectives, including strengthening labor discipline. The rights and opportunities granted labor collectives to further strengthen discipline, increase individual responsibility for work entrusted to them and, as a consequence, elevate all work to a new and higher level, should be used more fully.

The status of capital construction was subjected to serious criticism at the December CPSU Central Committee Plenum. This criticism applies wholly and fully to construction in rail transport. How, specifically, are the shortcomings in this area expressed? Allocated capital investments are not being fully utilized. Construction is often incomplete. The estimated cost of projects is exceeded. Construction schedules are not met. Work quality is not always to the mark. Some projects are released with unfinished work.

The 1984 plan anticipates 2.645 billion rubles worth of construction and installation work. Work volume on the existing network is being increased by 11 percent over the 1983 plan. The higher assignment must be met unconditionally, both as a whole and for all the main types of work.

Governed by the instructions from CPSU Central Committee General Secretary Yu. V. Andropov, we need to comprehensively examine all bottlenecks which delay this work and to draw up a concrete plan for eliminating them. This plan should

anticipate the efficient use of capital investments, as well as organizational, technological and administrative restructuring.

Neither can we allow a situation such as the one which occurred last year, when the Ministry of Railways construction plan as a whole was carried out, but 70 million rubles in capital investment for developing the existing network was not used. The allocated funds were not fully used on the Southern Urals, Kemerovo, Krasnoyarsk, Eastern Siberia, Transbaykal and several other roads. Unfortunately, these were precisely those portions of the network especially in need of development and improvement in sociocultural conditions for railroaders.

Funds for electrifying lines, developing stations and increasing capacities for rolling stock repair plants and spare parts production were not fully utilized.

Construction tempo was slowed by the slow development of estimate-planning documentation, poor work front preparation, the irregular allocation of "windows" in traffic schedules, slow resolution of problems associated with setting aside land and failure to meet equipment delivery schedules. Especially astonishing is the position of some commanders who have not ensured the prompt shipment of construction materials for transport construction sites. Order must be brought to all this, and the sooner the better.

The Soviet state allocates considerable funds for the development of rail transport. We need to struggle resolutely, persistently, to utilize each ruble allocated for capital construction. Perhaps an even stronger word is better: we need to fight for this. It is as important as shipment plan fulfillment and as meeting economic and technical indicators. Without it, it will be impossible to create normal conditions for successfully mastering the growing volume of shipments. Thinking about the long term means developing the economy at high rates, broadening the material-technical base of transport and, consequently, dealing with capital construction well ahead of time and in the most serious manner.

In order to increase the effectiveness of all rail transport links, special attention needs to be paid to accelerating scientific-technical progress. The Ministry of Railways collegium has repeatedly reviewed the questions connected with this. In September of last year, an expanded meeting discussed the main ways of accelerating the development of science and engineering, of using scientific-technical achievements to significantly increase the effectiveness of all rail transport work.

The main scientific-production problems have been defined. Responsible leaders have been approved. The road chiefs and chief engineers visited the VNIIZhT [All-Union Scientific Research Institute of Rail Transport] to familiarize themselves with all that is new and progressive, with what needs to be introduced first. However, energetic work has not yet been forthcoming. And we must not delay.

The task is to find effective forms of organizing scientific-technical activity, to bring it as close as possible to the solution of concrete production problems. This applies foremost to improving the organization and technology of the shipping process on a base of the broad introduction of computer equipment. Considerable funds have been spent on computers and automated control systems [ASU].

But, with the exception of the Belorussian mainline, little practical work has been done on the roads to use this very latest equipment in managing operational work.

Why? Because, in spite of repeated demands, the ministry administrations concerned and the road chiefs have not undertaken to introduce the Belorussian experience. This work lacks the necessary purposefulness. It is precisely the first leaders, as was the case in Belorussia, who must head up the introduction of an automated control system.

The Northern, Moscow, Gorkiy and a number of other roads are now installing standard train traffic control systems. And weak spots are already evident. The fact is that operations technologists have not been enlisted extensively in the development of the system. Neither have the road leaders been adequately concerned with organizing this work. All this needs to be immediately corrected, primarily organizationally. We need to achieve a situation in which the work is done quickly, by qualified people, and so as to yield the needed impact.

Much attention was paid at the joint meeting to perfecting planning and financial work, both in the central apparatus and on the roads. This past year, unsubstantiated plan corrections were resolutely curtailed. This forced enterprise leaders to persistently seek out and use internal reserves to meet assignments.

The attitude towards plans as immutable laws must be secured. It is important to intensify the struggle for universal, very strict observance of economy procedures. This means the plan must be carried out not at any cost, but with minimal labor, material, fuel-energy and financial expenditures. The demand for meeting such very important economic indicators as labor productivity, profit and net cost must be intensified.

In order to increase interest in highly effective work, the system of material incentives for transport laborers must be perfected more persistently. All levels of transport administration are faced with refining plan, cost-accounting and capital-generation indicators. Brigade forms of labor organization and incentives, using cost-accounting principles, must be introduced more energetically and broader use must be made of the potential for combining occupations and positions.

It is important to strengthen in every way possible enterprise independence, to increase enterprise interest and responsibility for end results. To this end, a number of economic experiments are to be conducted in 1984.

Transport economists should concern themselves seriously with developing a more perfect system of planning freight shipments on the basis of territorial production and consumption balances. This is the true path to a decisive reduction in inefficient shipments and to lowering specific transport expenditures in the national economy.

Comrade Yu. V. Andropov pointed out, in his speech at the December CPSU Central Committee Plenum, the high losses to the state cause by inefficient freight shipments. The necessary order must be brought to production specialization and co-operation, to eliminating unneeded shipments, which are burdensome to the nation's

economy. One must also think through the future distribution of production forces. Many questions must be resolved on a national economic scale, but railroaders must also contribute their bit to making freight shipments more efficient. On the whole, much very serious work lies ahead.

Enormous amounts of material goods are being shipped. And railroaders are obligated to deliver them fully intact to their destinations. Recently, as a result of the work done, losses due to loss and theft have dropped somewhat. However, they are still very high. In 1983, the railroads had many millions of rubles worth of the nation's wealth lost, stolen or spoiled.

Transport workers themselves sometimes take part in these thefts. These people disgrace the high title of railroader. This situation will no longer be tolerated.

It must be made clear to each commander and each railroad worker that he is responsible not only for prompt shipment, but also for delivering freight intact. Everything we ship must be delivered to its destination intact and in good condition.

It must not be forgotten that losses due to theft are damaging to railroaders both materially and morally. One must not gaze calmly at the sight of some rail transport workers being drawn into criminal acts, going wrong morally. The most resolute steps must be taken on the roads, divisions and enterprises to eradicate these disgraceful phenomena.

In order to successfully carry out the tasks set the branch in CPSU Central Committee Plenum resolutions and the speech by Comrade Yu. V. Andropov, we need to continue persistently improving the style of work in all links of the Ministry of Railways. The reference here is foremost to perfecting the work style of supervisory workers, beginning with ministry leaders and reaching the commanders of the very lowest links. What has been done along this line is only the start of much laborious work which lies ahead.

The meeting stressed the necessity for the broader development of criticism and self-criticism as a most important means of eliminating shortcomings and moving forward. Conditions favorable to the free expression of thought, exchanging opinions and making suggestions must be created here, there and everywhere, that is, we need to create an atmosphere in which any worker can freely express anything which disturbs him.

The reference is to broadening criticism not only from above, but even more, from below. Only in such an atmosphere can we achieve further improvement in work style, create in all links an air of high demandingness and responsibility, of intolerance of shortcomings, and achieve the enterprising, creative work of each commander and each railroader.

The December CPSU Central Committee Plenum set the task of developing a program for comprehensive improvement of the management mechanism and organizational structure in all links, at all levels. Much remains to be done along this line in rail transport. In continuing the branch management and subdivision restructuring now begun, we need to more energetically eliminate parallelism, duplication of effort, functional disconnectedness and other shortcomings. In this

regard, it should not be forgotten that restructuring is not a fad, but a necessity for radically improving our work. Before a decision is made, everything must be thought through very carefully and thoroughly, weighed and substantiated.

In order to impart greater organization and better planning to the development and operation of rail transport, it is appropriate to work out comprehensive plans for actualizing the technical opportunities of each railroad, each division and enterprise. By being aware of the actual potential of a given enterprise, station, junction, sector, road or network line, we will be able to use production reserves more intelligently. The opinion was expressed that it would be appropriate to closely examine opportunities for consolidating a number of divisions in order to reduce the number of junctions and lower administrative-management costs. Other proposals were also made on perfecting the management structure. They will be thoroughly reviewed in order to make the necessary decisions.

Previous decisions should not be forgotten when perfecting management style and methods, when working out new measures. Those decisions made recently by the collegium, the ministry leadership and the trade-union central committee are a good organizational, technological and psychological foundation for successfully carrying out plans and socialist obligations, for continuing to improve work efficiency and quality.

Particular attention was paid at the meeting to perfecting work with people. We need to be constantly concerned about improving the organization of personnel training and skill improvement. We must not count on the forced introduction of the achievements of scientific-technical progress, on improving labor productivity and production efficiency, without properly organizing the training of people. Continuous personnel training is also necessary to introduce scientific labor organization and leading experience.

Comrade Yu. V. Andropov emphasized in his speech at the December CPSU Central Committee Plenum that "All our efforts in the economy are, in the end, directed towards raising the standard of living.... Any successes in developing production should be considered meritorious [only] when they are expressed in improvements in the well-being of the people." And everything possible must be done to use every opportunity to improve the well-being of railroad workers, to improve their working, recreation and everyday living conditions. A very great deal must be undertaken to reduce difficult manual labor, at which many branch workers are still employed. A comprehensive program to eliminate heavy manual labor, to run to the year 2000, is now being developed. Economic leaders and trade-union committees must involve all laborers in this work more actively. We must, by using the experience of the best collectives, invest this program with taut assignments so as to resolve this important social task more quickly.

Improving housing and personal-services conditions for transport workers is especially important. The families of many railroaders are waiting for apartments. The lines to place children in kindergartens and day nurseries are not decreasing, the number of places in dining halls is increasing slowly, and there are quite a few shortcomings in the operation of medical facilities. In order to correct this situation, it must be dealt with in the most serious manner, with strict inquiries into disruptions of social development plans and violations of collective agreements.

The attention of leaders of railroads, divisions and enterprises was focused on the necessity of developing subsidiary farming in every way possible so as to improve the supply of foodstuffs to railroad workers.

How could leaders of the Volga, Transbaykal, Azerbaijan, Gorkiy, Kemerovo, Sverdlovsk, Western Siberia and Western Kazakhstan railroads have permitted 7.5 million rubles allocated for housing construction to have gone unused this past year? Some 40,000 m<sup>2</sup> of living space was lost due to this, and a minimum of 1,500 families did not receive apartments. We cannot reconcile ourselves to such an attitude towards housing construction. The Ministry of Railways collegium and the trade-union central committee presidium are calling those to blame strictly to account for the breakdown in the construction of housing, schools, hospitals, dining halls, personal-services facilities, stores and everything railroaders need.

January is half over in this, the fourth year of the 11th Five-Year Plan. The collectives of a number of roads, divisions and enterprises have made a confident start. This was reported to the meeting by many speakers. As a whole, the network has shipped above the plan more than 1.5 million tons of various national economic output. Good examples are offered by the collectives of the Moscow, Donetsk, Southeastern, Belorussian, Moldavian, Azerbaijan, Dnepr, Tselin Krasnoyarsk and Druzhnaya, whose purposeful work enabled them to achieve plan overfulfillment from the very start of the year.

At the same time, the October, Alam-Ata, Northern Caucasus, Central Asian and several other roads have permitted significant losses, which is having a negative effect on the work rhythm of the network as a whole. One cannot but be upset by the attitude of certain road and division commanders towards meeting the plan for loading the most important freight.

The collegium has warned the chiefs of the October, Northern Caucasus, Alma-Ata, Volga and Central Asian railroads about their serious responsibility for eliminating shortcomings in their work and for unconditional fulfillment of the 1984 plan assignments.

The tasks facing railroaders are becoming increasingly larger and more complex. This demands of commanders and all workers a creative approach towards this work. We need to learn to think on a large scale, to constantly find optimal resolutions, to be bold, to move matters forward persistently.

A detailed resolution on the question discussed was adopted.

The Ministry of Railways collegium and trade-union central committee presidium assured the Party Central Committee and Soviet Government that railroaders, inspired by the resolutions of the December CPSU Central Committee Plenum, are doing everything possible to further strengthen the might of our homeland, to successfully carry out the 1984 plan and the five-year plan as a whole.

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## RAIL SYSTEMS

### MOSCOW CAR REPAIR INITIATIVE 1983 PROGRESS REPORT

Moscow EKONOMICHESKAYA GAZETA in Russian No 2, Jan 84 p 6

[Article by P. Dmitriyev: "Industry--to Transportation: How the Initiative of the Muscovites Is Being Carried Out"]

[Text] The year has been filled with the initiative of the leading Moscow industrial and construction enterprises in organizing, on their own, the routine repair of railroad cars and containers. The more than 630,000 freight cars and about 200,000 containers that have been returned to operation show what the dissemination of this important initiative had done. More than 6,900 enterprises and organizations of various industries have participated in this work which has been conducted on an economic contract basis.

The Muscovites are in the lead. The collectives, which have serviced the capital's mainline, have repaired 57,400 cars. Production workers have repaired 55,100 cars on the Gor'kiy Railroad, 51,200 on the Sverdlovsk, 44,100--Dnepr, 36,200--Northern, 31,700--October, 37,600--Baltic, 27,000--Donetsk, and 26,900 cars on the South Urals.

The example of the Moscow area indicates the growth of the initiative. Some 698 enterprises participated in the repair work at the beginning of the year; now there are 1,624.

Great organizational work was conducted at enterprises of USSR Minchermet [Ministry of Ferrous Metallurgy], Minkhimprom [Ministry of the Chemical Industry], USSR Minstroymaterialov [Ministry of the Construction Materials Industry], and Minudobreniy [Ministry of Mineral Fertilizer Production]. The routine repair of 103,000 cars was accomplished at USSR Minchermet plants, Minkhimprom--87,400, Minstroymaterialov--60,000, Minudobreniy--44,600 cars.

The Sverdlovsk people achieved the best results in the routine repair of containers. Some 39,000 containers were repaired through the energy of the industrial enterprises within railroad maintenance. Their repair was well managed at the enterprises of USSR Minlegprom [Ministry of Light Industry] (28,000), Minavtoprom [Ministry of the Automotive Industry] (18,000), and Minelektrotekhprom [Ministry of the Electrical Equipment Industry] (14,900 containers).

The routine repair of rolling stock was competently managed at the Yaroslav Tire Plant where a siding for 20 cars was specially equipped. The collective of the Yaroslavl-Glavnyy railroad car depot helped this enterprise by allotting to this work 149 cubic meters of lumber, 500 kg of electrodes, and more than 8 tons of metal products. As a result, an additional 6,300 cars were prepared for transporting tires.

Cars for the October Railroad are being repaired in an exemplary fashion. The association Fosforit here has a special shop in which the necessary equipment has been set up. Multiskilled crews, with 62 persons in all, are doing the repair work around-the-clock. This is the only enterprise in the country at the present time which repairs cement-carrier tank car unloading devices. This work requires a large amount of very labor-intensive parts and assemblies. Since the beginning of 1983, Fosforit has repaired more than 2,500 cars, including more than 600 cement-carrier tank cars, having repaired the unloading devices.

At the same time, this important initiative has not received the "green light" at enterprises of USSR Minugleprom [Ministry of the Coal Industry], USSR Mintsvetmet [Ministry of Nonferrous Metallurgy], USSR Minlesbumprom [Ministry of the Timber, Pulp and Paper, and Wood Processing Industry], Minsel'khozmash [Ministry of Tractor and Agricultural Machine Building], Minsudprom [Ministry of the Shipbuilding Industry], Minmorflot [Ministry of the Maritime Fleet], Minavtoprom [Ministry of the Automotive Industry], and RSFSR Minrechflot [Ministry of the River Fleet]. Sufficient measures are also not being taken to disseminate the Moscow initiative on these railroads: Transbaykal, Moldavian, Krasnoyarsk, Tselin and Azerbaijan.

On the Dnepr line, Minkhimmash enterprises have pledged to repair 1,080 cars but have not kept their word. On the Transcaucasian Railroad, the Yerevan Industrial Rubber and Vitamin Plants are avoiding doing the repair work.

On the Tselin Railroad, the association Karagadaugol' has not fulfilled its contractual obligations. The Dobropolskaya TsOF [central concentration plant] and the association Selidovugol', within the Donetsk Railroad, have not started to repair cars.

Such examples, unfortunately, are not isolated. However, they are becoming rarer. While, on the other hand, the ranks of the followers of this glorious initiative are increasing with every passing day.

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## RAIL SYSTEMS

### INCREASES IN SOVIET ROLLING STOCK EXPORTS

Moscow FOREIGN TRADE in English No 2, Feb 84 pp 34-38

[Article by Aleksey Zmeyev, candidate of economic sciences: "Railway Rolling Stock: USSR Exports and Specialized and Cooperated Manufacture"]

[Text]

The Soviet Union has the world's largest railway system. With a 3,465,000 million ton-km freight traffic in 1982 the Soviet railway ranks first; its three major components, as compared to the world's, being as follows (percentage): freight transportation, over 50; passenger traffic, more than 20; and route length, 11.5. The electric route length is also the longest (44,000 km). In 1981 and 1982 the Soviet locomotive and railway car industry topped every country in the world in the manufacture of all major types of rolling stock—diesel and electric locomotives and freight and passenger cars, leaving behind the USA whose production of main-line diesel locomotives and freight cars had exceeded that of the Soviet Union in 1979 and 1980.

Main-Line Locomotive and Railway Car Output in Soviet Union

		1960	1970	1982
Diesel locomotives	sections '000 hp	1,303 2,618	1,485 3,794	1,298 3,596
Electric locomotives	number '000 hp	396 2,082	323 2,428	451 3,729
Passenger carriages	number	1,656	1,791	1,939
Freight cars	'000	36.4	58.3	58.6

Analysis of the data indicates that the past two decades have been characterized by the growth of both the manu-

facture of rolling-stock and the aggregate power of locomotives, the latter indicator increasing between 1960 and 1982 by 37.5 per cent and 79 per cent in diesel and electric locomotives respectively. The output of freight cars over the reviewed period went up 1.6 times.

And here are broader-range statistics to compare Soviet and world rolling-stock production. In 1980 the production of locomotives, coaches and wagons in 16 major industrial capitalist countries (Australia, Austria, Belgium, Great Britain, Spain, Italy, Canada, the Netherlands, Portugal, the USA, Finland, France, the FRG, Switzerland, Sweden and Japan) and all the CMEA member-countries was as follows (units): diesel locomotives, 5,202; electric locomotives, 1,259; passenger carriages, 7,046; and freight cars, 228,100.\* including the Soviet Union: 1,378; 429; 1,990 and 63,000 respectively. Thus, the share of the Soviet Union in the total 1980 production of each of the four types of rolling-stock by major manufacturers was (percentage): 26.5; 34.2; 28.2; and 27.6. Some Western countries include shunting engines in their statistics of diesel locomotives as well which somewhat exaggerates the figures. In 1981 and 1982 the share of the Soviet Union in diesel locomotive and freight car production (electric locomotives as well) slightly exceeded 30 per cent.

Its powerful production and scientific potential enabled the Soviet railway engineering industry in the mid-1960s to start special manufacture of diesel locomotives for export. The initiative was based on an earlier CMEA decision to let the Soviet Union specialize in the manufacture of main-line diesel locomotives and meet the socialist countries' demand for these machines. The vast experience of Soviet locomotive makers was very helpful in fulfilling this requirement. It is common knowledge that Soviet railways run through all climatic zones—from the Arctic to sub-tropical. The great experience of the Soviet locomotive designers and constructors helped create diesel and electric locomotives that could be relied upon under every operational and climatic stress and on a par with foreign makes in performance (technical and economic) standards.

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\* The estimates are based on the capitalist countries' industrial statistics for 1980 and the *CMEA Member-Countries' Statistical Year-Book for 1980*, Finansy i Statistika Publishers, Moscow, 1981.

The latter part of the 1960s was marked by a boom in Soviet exports of railway rolling-stock which progressed as follows (million rubles' worth): 1960, just 7.3; 1965, 28.5; 1970, 55.6; 1975, 151.9; and 1982, 189.7 (or a 26-fold increase as against 1960). The exports are handled by the All-Union Association Energomachexport, well known to our partners in the socialist, capitalist and developing countries.

The pattern of Soviet rolling-stock exports corresponds in large measure to the above-mentioned specialized manufacture within the CMEA framework, the major component being diesel locomotives as well as spare parts and accessories for the locomotives.

It is noteworthy that in 1960 the Soviet Union did not export a single diesel locomotive. In 1965 there were 88 of them on the export list; in 1970 the number rose to 167. All in all, more than 4,000 main-line and shunting diesel locomotives with a total power of over eight million hp was exported from the Soviet Union between 1965 and 1982.

The first Soviet diesel electric locomotive for export (model M62, 2,000 hp, 1,435/1,520 mm gauge) was made back in 1964 at the Voroshilovgrad locomotive works (now a production association). Its serial production and exports to Hungary were started in 1965. In subsequent years modified models of this locomotive with axial load 19.4 t (as requested by customers) were supplied to the GDR, Poland, Czechoslovakia, the Korean People's Democratic Republic and Cuba.

Soviet Rolling-Stock Export Structure

		1960	1970	1982
<b>Total</b>	min rubles	7.3*	55.6	189.7
Diesel and electric locomotives	number min rubles	140** 1.3	209 37.1	201 42.8
Open freight cars	number min rubles	— —	38 0.4	253 6.8
Spare parts and accessories	min rubles	0.7	9.8	56.1

\* Including 60 steam locomotives.

\*\* Nine electric locomotives.

By the early 1970s the same enterprise developed and put into production a new model of the main-line diesel locomotive—TE-109 (3,000 hp) for freight and passenger trains which was exported to the GDR, Bulgaria and Czechoslovakia. The model has a four-stroke SD49 diesel engine (fuel consumption—151 g/hp/h plus 5 per cent) a.c. and d.c. transmission, electrodynamic brakes and an electric heating system for passenger carriages. Its fuel economy characteristics are far better than many foreign makes of the same class engines.

A more powerful model is the TE-129 (4,000 hp) for fast passenger and freight trains. It is also equipped with the same electric transmission, electro-dynamic brakes, and a heating system for passenger carriages. The model was exported to the GDR in two modifications.

Besides those mentioned above in the mid-1970s the Voroshilovgrad works started to produce a special TE-114 (2,800 hp) model for export to tropical countries (for tropical operation—2,600 hp). The model ensures reliable performance in temperatures up to plus 50° C in a highly dust-polluted atmosphere; it has special air filters and a closed engine cooling system. The driver's cabin is insulated from the engine and air-conditioned. The model has right-and left-hand traffic controls.

Finishing touches are being put to a new export model—a universal diesel locomotive TE-127 (2,400 hp, light axial load, gauge from 1,000 to 1,676 mm).

A number of the Soviet models made for export have standardized assemblies and parts (also locomotives for home use) thus making their manufacture and servicing cheaper and easier. The use of standardized assemblies, tested in rigorous climatic conditions throughout the Soviet Union on export models, ensures their high reliability a fact which won gold medals for Soviet locomotives (models 132, 142 and 07) at the Leipzig and Plovdiv international fairs.

Several types of shunting locomotives are also made for export by the Soviet industry. The TGM series (diesel hydraulic locomotives) are manufactured by the Lyudinovo works not only for the Soviet railways but also can be used on 1,435 mm and 1.067 mm gauge. Their axial

load is low, an advantage in countries where the upper structure of the tracks is not so strong. They were exported to socialist (Bulgaria, KPDR, Poland and Yugoslavia) and developing countries.

The association Bryansk engineering works makes two modified models of shunting diesel locomotives for export (electric transmission and maximum load on rails by wheel axle—20 t): TEM2E (1,200 hp) for countries with a moderate climate, and TEM2T for tropical countries (nominal diesel power 1,030 hp at 40° C, 400 m altitude and 95 per cent air humidity). These models were supplied to Bulgaria, Poland, KPDR, Mongolia, Cuba and some developing countries where they are used not only for shunting operations (at industrial enterprises as well), but also for passenger and freight transportation.

The Kambar mechanical works which specializes in the TU series diesel locomotives for shunting and hauling work on railways and at industrial enterprises puts out two 750 mm to 1,435 mm gauge models for export: TU7E (400 hp, hydraulic transmission with 6-6.5 axial load) and TU6E (120 hp, mechanical transmission with 3.5 axial load). Both models have cold and tropical climate modifications. Their export to Vietnam began in 1967 and to Cuba and Poland in 1974.

The Murom diesel locomotive works manufactures shunting diesel hydraulic locomotives for export, specifically, the TGM23B model (500 hp) for Poland. The Kalluga mechanical engineering works exports to the GDR and Czechoslovakia the TGK2 type (230 hp) shunting industrial diesel hydraulic locomotives.

The electric locomotive industry is also well export-oriented. Today in the Soviet Union two types of main-line electric locomotives are manufactured for export at the Novocherkassk works: Sr-1 for Finland (with wide use of extensive cooperated deliveries) and ET42 for Poland; mine electric locomotives are also manufactured there.

The ET42 is a 4,480 kW two-section model for a 1,435 mm gauge. It is based on the VL10 domestic model and is designed for freight traffic on Poland's electric railways. It has a rheostat braking system. For easier assembly, dismounting and repairs all its equipment is made in blocks that can be lifted through special openings in the roof.

Soviet mine electric locomotives are of various powers and sizes: battery-driven (K-7, K-10 and K-14) or d.c. contact machines (250 V), for gauges of 600, 750 and 900 mm. Their electrical equipment is explosion-proof and all mechanisms have protection against the aggressive environment. These locomotives are exported to socialist and some Western countries.

The Riga wagon works has good facilities for the export production of electric trains. In the past decade it has made 80 four-carriage trains of the ER25 type (maximum speed 130 km per hour) for Bulgaria. The carriages are electrically heated. The train is equipped with electric rheostat, electric pneumatic and hand brakes. Since 1980 this works has been exporting new ER31 electric trains (also four-carriage) to Yugoslavia. A contract provides for the delivery of 26 such trains there.

To produce competitive export models of locomotives and cars the Soviet Union had to possess not only advanced production facilities, but also a solid scientific potential—large research institutes with affiliates that apply the latest advances in mechanical engineering and electronics to the designs and develop new, up-to-date rolling-stock, which it did.

**Soviet Railway Rolling-Stock Exports to Major Importer Countries  
(mln rubles)**

	1960	1970	1982
<b>Total</b>	<b>7.3</b>	<b>55.6</b>	<b>189.7</b>
including:			
Bulgaria	0.7	1.9	11.5
Hungary	0.1	5.7	5.4
GDR	0.4	11.7	30.9
Cuba	—	1.4	18.6
Poland	0.4	18.1	47.3
Czechoslovakia	0.1	14.8	13.5

Soviet exporters of rolling-stock pay much attention to well-organized technical servicing of their products, including adequate, timely supplies of spare parts. Energomachexport has its technical service centres in many CMEA member-countries (Bulgaria, Hungary, the GDR, Poland and Czechoslovakia) which also give consultations

and train local personnel. In some countries it has guarantee and consultation stations.

Socialist countries are the major importers of Soviet rolling-stock. Outstanding among them are the GDR and Poland.

From among the industrial Western countries a traditional importer of Soviet rolling-stock, chiefly main-line electric locomotives, is Finland which in the 1973 to early 1983 period purchased one hundred Sr-I locomotives. Finland also imported from the USSR freight cars, wheels and axles. In the mid-1970s the French firm Solmer bought 18 shunting TGM8 diesel locomotives (800 hp) for the iron-and-steel complex in Fos-sur-Mer. Other West European importers include Sweden and Spain. The former has been annually importing (since 1969) wagon wheel pairs and the latter purchased mine electric locomotives and spare parts for them.

As to the developing nations the first batch of Soviet-made shunting diesel locomotives of the TEI series (750 hp) arrived in India for use at the Bhilai steel plant as far back as 1958; they were followed by exports of electric locomotives for use in mines. Iraq imported between 1969 and 1971 a large shipment of freight cars (120 hoppers) and a number of railcars and track machines.

In 1975 and 1976 twenty-three TE-114 (tropical model) main-line electric locomotives were sold to Egypt and Syria. The TEM2T shunting diesel locomotives (tropical modifications) and spare parts for them were imported by Syria and Guinea. Iran, Egypt and Turkey purchased the TGM type. Mine electric locomotives and spare parts were exported to Argentina and Bolivia, whereas Turkey imported wheel pairs.

Soviet exports of railway rolling-stock are facilitated by specialized and cooperated manufacture within the CMEA framework, an important form of socialist economic integration. International specialization enables the member-nations to use their material, financial and labour resources more rationally and concentrate their efforts on developing major industries and lines of production. Over 120 international agreements on mul-

ilateral specialization and cooperation in production (MSCP) are being implemented. Ninety of them concern mechanical engineering, radiotechnical and electrotechnical industries.

Five agreements between the CMEA member-countries and Yugoslavia for 1981 to 1985 period are operative on MSCP of railway rolling-stock and its mutual delivery: on diesel locomotives, on electric locomotives, two on freight and passenger cars (for the USSR in imports only) and on track machines. Each of them specifies in agreed assortment of specialized products by the following parameters: power of locomotives and type of wagon, their technical characteristics, and volumes and time of deliveries (on an annual basis).

Fulfilment of these agreements has not only boosted specialized production (the share of the Soviet Union in diesel locomotive production within CMEA framework rose from 57.7 per cent in 1970 to 64.7 per cent in 1980), but has also given a further impetus to mutual trade in rolling-stock between the USSR and other CMEA member-countries. In the 1970s this trade was conducted at a faster rate than the production of locomotives and wagons.

Specialization contributes to extended cooperated manufacture, especially in producing completing parts. For example, the mentioned above ET42 electric locomotives exported by the Soviet Union to Poland are fitted with some Polish-made equipment, and Hungarian compressors. The ČME-3 diesel locomotive imported by the Soviet Union from Czechoslovakia are equipped with Soviet-made brakes and auto-couplings (SA-3 type); Soviet-made brakes, wheel pairs and electrical equipment (for carriages) are installed on passenger and freight cars exported by the GDR to the Soviet Union, while Poland exports to the Soviet Union wagons fitted with Soviet auto-couplings and wheel pairs.

Soviet-made ER31 electric trains exported to Yugoslavia are also based on cooperated manufacture. A part of the completing equipment and assemblies for these trains which meet all up-to-date requirements and the customer's wishes is supplied to the Riga works under co-operated manufacture agreements with Yugoslav and some other foreign companies.

Soviet cooperation with capitalist countries in engineering (both production and sales) as a form of economic cooperation supplementary to and having a positive effect on traditional trade relations dates back to the 1960s and 1970s. In the early 1980s, however, it began to slow down under increasing influence of external negative factors.

The past decade witnessed very effective production cooperation in rolling-stock between the Soviet Union and Finland. Under an order placed by the Finnish railways Soviet locomotive makers designed and developed, using their vast knowledge and available up-to-date technical facilities, a four-axle main-line electric locomotive (Sr-I model) for passenger and freight trains. This very promising export model is made by the Novocherkassk electric locomotive works in cooperation with the Finnish company Strömberg (supplying thyristor rectifiers), and some other Finnish and foreign companies making completing equipment.

The Sr-I model's characteristics are as follows: power, 3,280 kW a.c.; tractive effort, 15,800 kg; maximum speed, 160 km/h; and axial load, 21.5 (according to the customer's specifications). It is equipped with electrical and pneumatic brakes. Its performance is highly appraised by the Finnish railway management.

Well-organized technical servicing of Soviet electric locomotives in Finland also contributed to their extended exports to this country by Energomachexport. Adequate and prompt servicing is known to be a major factor conducive to increased sales of rolling-stock and other transport vehicles and equipment.

Technical servicing for Soviet electric locomotives in Finland is provided by the joint-stock society Koneisto and the Finnish agent company Kontram. A/O Koneisto has built the depot in Masala provided with Soviet machines and equipment for technical inspection and guarantee repairs of Sr-I electric locomotives. The depot has two storages: one for guarantee spare parts and the other as consignment warehouse. However, most of the guarantee spare parts go directly to the locomotive registration depots. Visiting engineers from the Novocherkassk works advise and train local Finnish personnel and give whatever

practical aid is necessary.

In conclusion it ought to be emphasized that Soviet-Finnish cooperation in rolling-stock exchange continues to expand; it is not confined to the manufacture and deliveries of electric locomotives. Under the Long-Term Programme for the Development and Deepening of Trade, Economic, Industrial, Scientific and Technical Co-operation between the USSR and the Republic of Finland till 1990 (May 18, 1977) and the Protocol on its prolongation up to 1995 dated November 12, 1980, more extensive cooperated manufacturing activities are envisaged, *inter alia* with the Strömberg company in making asynchronous drives for electric locomotives and with the Finnish firm, Rautaruukki, in producing specialized freight cars.

Thus, specialized production of railway rolling-stock within the CMEA framework and its cooperated manufacture with socialist and Western countries have had and will continue to have a positive effect on Soviet exports of this equipment.

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## RAIL SYSTEMS

### OFFICIAL ON NATIONWIDE METRO CONSTRUCTION PLANS

Moscow TRUD in Russian 4 Jan 84 p 4

[Interview with A. Korolev, chief engineer and deputy chief of USSR MPS main metro administration, by correspondent N. Dombkovskiy: "Metro at the Boundary of the Centuries"; date and place not specified]

[Text] A. Korolev, the chief engineer and deputy chief of the main metro administration of the USSR MPS [Ministry of Railways], answers the questions of the TRUD correspondent on prospects for the growth of metros in the country.

N. Dombkovskiy: It is not necessary to reiterate what a metro means to a large city. Aleksandr Ivanovich, let's peep into the not so very distant future and see what the most convenient form of transportation will be. The first question: in which cities will underground express trains appear?

A. Korolev: There are now eight metros in operation in the country: in Moscow, Leningrad, Kiev, Tbilisi, Baku, Kharkov, Tashkent, and Yerevan. Next year the metro in Minsk will become operational; and a year later in Gorkiy and Novosibirsk. In the next five-year plan the "M" neon letters should light up in Sverdlovsk, Kuybyshev, and Dnepropetrovsk.

In the future the blue express trains will appear in Alma-Ata, Omsk, Chelyabinsk, Perm, Ufa, Odessa, Rostov-on-Don, and Riga. Engineering plans and technical and economic justifications for planning lines in these cities are being prepared.

N. Dombkovskiy: What other cities can count on having their own metro in the future?

A. Korolev: The construction of a metro is an expensive proposition. It is justified only where there are stable intra-city passenger flows of more than 30,000 people an hour. In practice this means that metro construction projects are not being considered for cities with less than a million inhabitants.

N. Dombkovskiy: But there are large cities, even though they do not have a million people, which stretch out greatly in one direction...

A. Korolev: It is more advantageous to build high-speed trolley lines there. Volgograd can serve as an example. Such a form of transportation has many virtues of metro but is considerably less expensive.

N. Dombkovskiy: What can be said about metro technical equipment? What new things await the passengers?

A. Korolev: The complete list of innovations is very large and all of them are aimed at one major thing--to increase the carrying capacity of metros. The level of traffic control automation is being increased. In the future, all trains will be controlled by a computer from one central post. Automated systems are already operating in six cities. The result is that there has been success in increasing the frequency of train traffic and in freeing up a large number of specialists--one engine-driver can now handle a train. In the future, when the Metro ASU/automated control system/ is finally introduced everywhere, the metro carrying capacity will grow significantly.

However, everything does not depend on our workers alone. Passenger service will improve if the times for the beginning and end of the work day are staggered at enterprises and institutions. This is within the competence of the local organs of authority. The experience of solving this problem in Moscow, Kiev, and Leningrad indicates that great potential has been hidden in this area.

N. Dombkovskiy: What can be said about the new cars?

A. Korolev: They are being constructed on a broad front. The car of the future will be roomier and lighter and its speed will be increased. It will be equipped with a forced air supply and a control system which will allow a savings in electric power.

N. Dombkovskiy: All readers, without exception, are interested in the Moscow metro. How will this system be developed?

A. Korolev: Several stations will become operational this year--a section from Serpukhovskaya to Borovitskaya and from Kashirskaya to Orekhovo. Another four will be built in 1985.

N. Dombkovskiy: Looking at the Moscow metro line diagram, one can conclude that the construction of a second ring should begin, e.g., a Kakhovskaya-Kashirskaya section.

A. Korolev: There will be no second ring as such in Moscow. The plan is to construct several so-called chord lines. They will connect the new areas that are building up in various ends of the capital, without passing through the center of the city. Your newspaper has already reported on the start of planning for such a route from Beskudnikov to Lyublino. Similar lines will stretch from the north to the southwest and from the northwest to the south. Their intersection forms a closed polygon which is essentially a ring-shaped transportation artery.

Moreover, the question of constructing high-speed metro lines in Moscow is now seriously being studied. They will connect the areas being intensively built up close to Moscow with its center. By intersecting with already existing portions, these lines will help to create a complete, very convenient city transportation network for passengers. This is our main goal for the future--to optimize intra-city transportation flows.

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## RAIL SYSTEMS

### TEM7 DIESEL LOCOMOTIVE PROFILED

Moscow GUDOK in Russian 8 Jan 84 p 4

Article by engineer V. Volkov: "The TEM7 Diesel Locomotive"

Text TEM7 diesel locomotives should come into our depot. Many diesel locomotive engineers are interested in knowing what this vehicle is, who produces it, and what its design features are. There is no description of this diesel locomotive anywhere. Please give us a very detailed description of it. (Yu. Sul'ko, machinist from Perm)

In 1973 the designers at the Lyudinovskiy Diesel Locomotive Construction Plant finished the development of a plan for a 2000 horsepower one-section locomotive intended for switching, hauling, and gravity yard work, and in 1975 the first two vehicles, manufactured in accordance with this plan, exited the gates of this enterprise.

The TEM7--the designation this series received--is an eight-axle diesel locomotive with a hood-type body. Its diesel-generator installation and basic equipment are mounted on a main frame. The running gear consists of four jawless four-wheel trucks connected by two subframes on which the body of the diesel locomotive rests. The wheel diameter is 1,050 mm, the gear ratio of the reduction gear is 17:75. The traction force is transmitted to the subframes from the four-wheel trucks by lever mechanisms and from them through pivots to the body on whose frame impact-traction devices have been mounted.

The 2-26DG power plant consists of a four-cycle, V-model, 12-cylinder 2-2D49 diesel engine and a GS-515 traction generator. The diesel engine has gas-turbine pressure charging and intermediate air cooling. The diameter of its cylinders and piston stroke is 260 mm. A synchronous 12-pole machine with separate excitation and a forced air supply serves as a traction generator. Its rated output is 1,310 kilowatts.

An electrical a.c./d.c. drive is used on the TEM7. Its power plant generator produces a.c. which, with the help of a UVKG-8U2 rectifier mounted on VL-200-6B valves, is converted to d.c. and fed to ED-120 traction motors. The field winding of the generator through the rectifier is connected with a VS-650/V synchronous exciter.

The control circuit of the locomotive is supplied with 110 volt d.c. An STG-7M starter-generator serves for charging the 48TN-450 storage battery, which can be substituted for the 68TPZhNK-250, and for feeding the EKT-3 motor which provides the drive for the PK-5.25 compressor.

The diesel locomotives have been equipped with a two-circuit cooler. Water cooling the diesel engine circulates in 12 sections of the cooler. In the remaining 18, water removes heat from the diesel oil through the heat exchanger and heat from the pressure-charged air through the air cooler.

The working weight of the diesel locomotive is 180 tons. The fuel capacity is 6,000 kg, oil--800 kg, sand--2,300 kg, and water--950 liters.

The load on the rails from a pair of wheels of a locomotive with a 2/3 supply of sand and fuel is 22.5 tons. It can be decreased to 21 tons by taking down the ballast plates.

Under long-term operating conditions, the TEM7 generates a tractive force of 35,000 kg. Its design speed is 100 km per hour.

The Lyudinovskiy Diesel Locomotive Plant has started series output of these machines. Ten of them are already in operation at the Sverdlovsk junction. In the next few years the intention is to replace the TEM2 and ChME3 diesel locomotives with them at stations with a large volume of classification work and intensive hauling sections.

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## RAIL SYSTEMS

### CONSTRUCTION OF BERKAKIT-YAKUTSK RAIL LINE PLANNED

Moscow TRANSPORTNOYE STROITEL'STVO in Russian No 12, Dec 83 pp 4-5

[Article by P. V. Sobolev, director of the Moscow State Planning and Surveying Institute of the USSR State Industrial Committee for Transportation Construction: "The Berkakit-Yakutsk Railroad"]

[Text] The 26th CPSU Congress has designed a broad program for developing the southern Yakutsk territorial-industrial complex: completing the construction of an open-pit coal mine and ore-dressing plant, and the first phase of the Neryungri state regional electric power plant; developing a technical and economic basis for exploiting the iron ore deposits in southern Yakutsk, and constructing the Berkakit-Tommot-Yakutsk railroad.

Between 1976-1981, already more than 1.5 billion rubles of capital investment have been spent here, and the 11th Five-Year Plan projects putting into full production the Neryungri open-pit coal mine with an annual output of 13 million tons of coal (at the beginning of the five-year plan the overall production of the entire Far East economic region was 40 million tons); the ore-dressing plant with an annual production of 9 million tons of processed coal; the first unit of the Neryungri state regional electric power plant with a capacity of 210,000 kilowatts of power; a construction industry base and a whole series of other facilities of the industrial and social infrastructure.

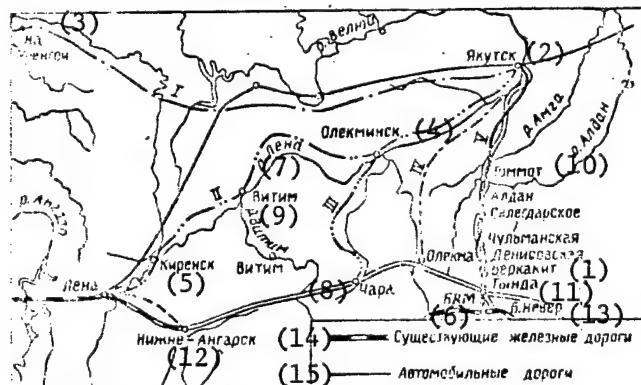
The Yakutsk Republic is linked with other regions of the Soviet Union by the Lena River, the Yakutsk-Magadan and Bolshoy Never-Yakutsk automobile routes, the Tynda-Berkakit railroad line, North Sea routes and air transportation. The density of the transportation network functioning year-round consists of 32.2 km per 100 square km of territory.

The viability and further development of the economy of the Yakutsk ASSR depends completely on the stability and timeliness of freight deliveries--i.e., it is determined by importation. In comparison with 1980, the freight imports in the republic should grow substantially.

With this in mind, it seems most expedient to construct the Berkakit-Tommot-Yakutsk railroad and complete work to improve navigation on the Lena River.

At the present time, import freightage is distributed approximately as follows: river transport, 60 percent; railroad (Tynda-Berkakit line), 18 percent; motor vehicle, 13 percent; sea, 8 percent; air, 1 percent. If the overall volume of river, sea and air transport remains the same, the share of railroad freightage in the republic should grow to 65 percent.

In the technical and economic planning for the construction of the Berkakit-Yakutsk railroad, several possible construction routes were considered (see map below): Tungus route from Urengoy with Yakutsk approach along the Lena-Velyuy lowlands (variant I); Lena route from the existing Tayshet station along the Lena River valley through Kirensk, Vitim, Olekminsk to Yakutsk (variant II); Chara route, along the tracks of the Baykal-Amur main line now under construction (the Lena-Chara section) and thence along the Chara and Lena Rivers to Olekminsk and Yakutsk (variant III); Olekminsk route, from the tracks of the Baykal-Amur main line now under construction (the Lena-Khani section) and thence along the Olekma, Tuulba and Lena River valleys to Yakutsk (variant IV); Tommot route, as a continuation of the Tynda-Berkakit line through Tommot to Yakutsk (variant V).



Possible railroad routes in southern Yakutsk region.

Key:

- |                          |                             |
|--------------------------|-----------------------------|
| 1. Berkakit              | 9. Vitim                    |
| 2. Yakutsk               | 10. Tommot                  |
| 3. To Urengoy            | 11. Tynda                   |
| 4. Olekminsk             | 12. Nizhne-Angarsk          |
| 5. Kirensk               | 13. Bolshoy Never           |
| 6. Baykal-Amur main line | 14. Existing Railroad lines |
| 7. Lena River            | 15. Automobile routes       |
| 8. Chara                 |                             |

In accordance with the technical and economic indicators, the Tommot route was recommended, which unites the whole territory of the Yakutsk ASSR with the exception of the Momskiy and Oymyakonskiy Rayons and two northern rayons (Bibinskiy and Chausskiy) in Magadan Oblast. The combined area of the region affected constitutes 3.1 million square km.

The area through which the tracks will pass is divided by relief into the southern mountainous section to Tommot and the northern section with gently rolling terrain from Tommot to Yakutsk. The elevation varies from 90-1,260 m above sea level.

The climate of the region is extremely severe, decidedly continental. The annual range in air temperature exceeds 100° C. The annual average temperature is 8-10° C.

The average long term precipitation varies from 430 to 665 mm in the south and is sharply reduced in the north, where it does not exceed 180-190 mm.

The indigenous rock, represented by gneisses, shales and granites, are covered with Quaternary deposits several tens of meters thick. Intensive destruction of the relief can be observed everywhere: rock displacement on slopes, undermining of river banks, talus slopes, rock-trains, surface subsidence due to thawing of ice-laden soils and buried ice, etc.

The hydrographic network of the track region is defined by the Lena River basin and is represented by its system of direct tributaries.

The basic technical parameters of the Berkakit-Yakutsk railroad are linked to the parameters of the adjacent sections of the existing railroads and correspond to Construction Norms and Regulations II-39-76 for single-track category II lines for the Berkakit-Tommot section (374 km) and category II for the Tommot-Yakutsk section (456 km).

It is projected that for the line it will be necessary to do 65 million cubic meters of excavation work, including 21 million cubic meters of chipped rock. It will be necessary to build 740 artificial structures, including 164 medium bridges, 10 overbridges, 21 large bridges. For building the artificial structures, it is projected that up to 420,000 cubic meters of concrete and ferro-concrete work will be done. It is projected that 43 separate points, including 9 stations with commercial operations will be opened on the line. The extent of station track initially will total 214 km.

Semiautomatic block signalling will be used to control train traffic. It has been proposed that an external electrical power supply be established for the line from the USSR Ministry of Energy electric power transmission line. Underground springs will be used for a water supply, and heat will be supplied by central boiler rooms with steam and generating boilers. Appropriate structures for servicing both locomotives and cars are projected for the line.

The gas supply for settlement inhabitants will be based on both imported and local natural gas.

The distribution of inhabitants in the railroad workers' villages is linked with the watch method of using line, for which seven permanent settlements and five watch points are planned. The permanent villages are designed on the basis of the full guarantee of living quarters with a standard of 13.5 square meters of area per person.

It has been established that a rational means of proceeding is to construct the line in segments, linking them with subsequent structures which are facilities of the Southern Yakutsk construction norms. Tentatively, the following sequence may be used: segment I--to the Denisovskaya mine (28 km); II--to Chulmakanskaya mine (56 km); III--to Seligdarskoe apatite deposits (264 km); IV--to Aldan (318 km); V--to Tommot (374 km) and thence to Yakutsk (318 km). Spacing of the line of construction order is not indicated. Each section should be started after completion of the previous one. It is possible to construct the line along large sectors: Berkakit-Tommot and then Tommot-Yakutsk. The total construction time, according to construction norm 440-79 is 8 years.

The construction is oriented toward the maximum use of the available production base of the Baykal-Amur Main Line, and most of all the construction industry bases, the warehouse and repair bases, as well as the residence allocation which the building trusts in Tynda have at their disposal. Hence, it is desirable that construction of the Berkakit-Yakutsk line begin no later than 1984.

The climate of the North is severe, and its nature is easily damaged. Economic activity of man--by treating her carelessly--may lead to losses difficult to recover. One must remember that the larch attains a diameter of 15 cm after 150 years, that it takes 200 years for 1 cm of vegetation to accumulate, and that a vehicle track heals in 30 years. This should be considered when designing, constructing and using the railroads.

The technical and economic substantiation for the Berkakit-Yakutsk railroad provides for the minimal right of way, sewage treatment of all fecal wastes and preliminary purification in local treatment plants of all run-off polluted by petroleum products.

All things taken together, science and industry are faced with much yet to do in mastering the North, including constructing the Berkakit-Yakutsk railroad while preserving its irreplaceable beauty for the benefit of man.

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## MARITIME AND RIVER FLEETS

### RIVER FLEET COLLEGIUM CONCERNED ABOUT LEVEL OF WORKER SAFETY

Moscow VODNYY TRANSPORT in Russian 28 Jan 84 p 3

[Unattributed article: "In the Collegium of the Ministry of the RSFSR River Fleet and the Union CC Presidium"]

[Text] The regularly scheduled joint session was devoted to discussion of the question "Status of Operations and Measures Adopted Relating to Worker Safety in the Enterprises and Vessels of the Moscow Shipping Fleet." The MRF [Ministry of the River Fleet] Collegium and the Union Central Committee Presidium noted that the number of accidents in shipping operations has not decreased in recent years. The shipping fleet managers, the port supervisors, and the industrial enterprise managers still have not made an objective evaluation of the status of the efforts related to preventing industrial injuries. The continuing three-level monitoring of worker protection status, which is one of the most effective forms of identification and elimination of violations and deficiencies relating to worker protection and safety engineering, is carried out only formally in the shipping organization, and there are many serious deficiencies in the matter of carrying out continuous monitoring. The schedules for verification of familiarity with the work safety rules and standards are not being met. Little effort is being expended on the introduction of SVOTVT [System of Work Safety in Water Transportation], SSVT [System of Work Safety Standards], and the introduction of safety engineering certification of the shops and departments.

The measures of the Union Central Committee and the MRF program of operation on further improvement of the outfitting of the workers and other employees with special clothing and footwear, and other protective equipment are being implemented extremely slowly.

The integrated plan for the improvement of working conditions and the introduction of health and safety measures in shipping operations is not being satisfactorily implemented. The shipping fleet management is not taking effective measures in this regard. This situation has led to a continuing high level of industrial accidents in the Moscow-West and Moscow-North Ports. The managers of these ports (V. Svetlov and Yu. Suslov) are not sufficiently involved in the questions of work safety.

The Presidium of the Union Basin Committee is not sufficiently exacting in regard to the managers of the shipping operations, enterprises, and the ship captains relative to eliminating the serious deficiencies and omissions concerning work safety and is not making use of its rights to act against the responsible individuals who are not carrying out the directives on work safety and are not taking measures to eliminate the causes of injury.

The MRF Collegium and the Union Central Committee Presidium recognized in their resolution that the measures taken by the management of the Moscow Shipping Fleet and Baskomflot [Basin Committee of the Trade Union of Workers of the Maritime and River Fleets] relative to the creation in the enterprises and the vessels of safe working conditions are very inadequate, do not meet the requirements of the governing bodies, and do not have any significant influence in eliminating accidents.

The MRF Collegium and the Union Central Committee Presidium instructed the shipping operation management to fully implement by 1 April the staff of safety engineering workers in the enterprises in accordance with the established staffing norms.

A severe reprimand was issued to Yu. Suslov, director of the Moscow-North Port, and a reprimand was issued to V. Svetlov, director of the Moscow-West Port, for the low level of organization of efforts relating to work safety, the high level of industrial injuries, and failure to follow the directives.

The MRF Collegium and the Union Central Committee Presidium warned Yu. Makarenkov, director of the Moscow Shipping Fleet, that if he does not take all possible measures to introduce proper order in this effort he will be held responsible.

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## MARITIME AND RIVER FLEETS

### INSTITUTE DIRECTOR ON S&T TRENDS IN SHIP DESIGN, FLEET PLANNING

Moscow VODNYY TRANSPORT in Russian 24 Jan 84 p 3

[Interview with Yu. I. Panin, director, Central Scientific Research Institute, Maritime Fleet: "Direction"]

[Text] The task of TsNIIMF [Central Scientific Research Institute of the Maritime Fleet] is scientific support of the development and operation of Soviet maritime transportation.

The institute has developed and introduced many organizational, technical, and technological measures relating to improving the operation of the transport fleet and its technical operation, including changeover to less expensive fuel grades. TsNIIMF has proposed new forms of labor organization, damage-free and safe cargo shipment, and reduction of the accident rate. In March 1979 the institute was awarded the Order of the Red Banner of Labor.

Our special correspondent A. Cheprasov talked with Yu. I. Panin, TsNIIMF's director, about what this team of scientists is now working on.

[Question] What problems are facing the institute's team in light of the resolutions of the 26th Party Congress and subsequent CPSU Central Committee plenums and the directives of the CPSU Central Committee and the USSR Council of Ministers?

[Answer] Our collective is working in accordance with an extensive program of scientific studies and regularly reviews this program to ensure timely account for problems that arise as a consequence of the latest advances in science and engineering. The party and government resolutions, which disclose deficiencies and pose new large-scale tasks, require that we initiate search for what is new in all areas of creative research and precise planning of scientific advances and their introduction. Of primary importance for us are the resolutions of the December 1983 CPSU Central Committee Plenum and the directives of the CPSU Central Committee and the USSR Council of Ministers: "On measures to accelerate scientific-technical progress in the national economy." Extensive discussion of these plans in the scientific divisions made it possible to formulate and substantiate a list of targeted scientific and technical problems in the [industry] branches and the programs to solve them in the coming five-year-plan period. We developed specific measures, realization of which will make it possible to utilize the existing capabilities.

These measures include justification of the overall programs for supplementing the fleet, the technical and operational requirements for the design and construction of new types of ships, powerplants, and outfitting equipment, and apparatus for the traditional and satellite-based means of navigation and radio communication.

After making a comprehensive analysis of the operation of the existing fleet, studying the correspondence of the adopted and implemented technical, technological, and organizational decisions to the actual conditions of operation, our specialists are working out proposals for further improvement of the technical resources of the fleet, and changes in the assignment of the ships to the various lines and routes. Several other studies are also being made, introduction of the results of which will have a positive influence on operation of the fleet.

[Question] Could you tell us about the ships that will be added to the maritime fleet in the remaining years of the 20th century and in the beginning of the next century?

[Answer] The institute plans to complete in 1984 the substantiation of the basic directions of scientific-engineering progress in maritime transport (in regard to the fleet) for the period up to the year 2000. We already have the first designs of the types of ships that will be used in shipping in the 13th-15th 5-Year Plans. These will be highly productive specialized and multipurpose diesel ships, diesel-electric ships, turbine-powered and nuclear-powered ships, oriented toward the carriage of the cargos which by that time will be presented to the maritime fleet by the domestic economy and foreign trade.

In addition the institute scientists see prospects for very favorable working and relaxation conditions for the seagoing crews.

In connection with the introduction into operation of the new lighterships, comprehensive studies will be completed in 1984 on the organization of their operation, the development of the planning of shipping routes for the low-tonnage lighterships of the Soviet Danube shipping operations. A system is also being developed for automated management of shipments by lightership. The institute has developed a comprehensive system of standards for damage-free and safe technology of cargo shipments on seagoing vessels.

Among our most important tasks are the development and introduction of energy-conserving and environmentally compatible technical and organizational approaches in ship construction and operation.

[Question] Science has always achieved the most remarkable results when it has maintained close contact with production. How does your organization cooperate with the industrial enterprises?

[Answer] For over ten years the scientific, design, and production organizations of Minmorflot [Ministry of the Maritime Fleet] in Leningrad have been working on joint developments and on introducing them into a comprehensive plan that calls for improving the effective use of the production funds of the Baltic Maritime Fleet.

In the search for the best form of cooperation there have been set up creative teams including scientists, designers, the teaching staff of LVIMU [Leningrad Higher Engineering Nautical School] imeni Admiral S. O. Makarov, and maritime shipping specialists.

In this way we have solved the problem of integrating the efforts of the scientists and the production workers. This has made it possible to verify and work out the resulting decisions and at the same time introduce them into operation. The Baltic Maritime Fleet became our primary production base for the development of new technical, technological, organizational, and other solutions.

Our efforts associated with the integrated plan were from the very beginning integrated with the urgent requirements of the fleet. Thus, by combined efforts we were able to shorten the time required for the repair of the normal wear and tear of the ship hulls. This resulted in a large saving of metal and shortened the overhaul times. A considerable effect was achieved from the efforts on reducing ship noise and vibration, and also from the use of less expensive grades of fuel. One of the latest examples is the development of a system for automated monitoring of the seakeeping and strength characteristics of vessels and calculating the cargo plans, carried out by the specialists of our institute, the BTsPKB [Basin Central Planning and Design Office], and the crew of the container ship N. Obukhov, on board which this system is in experimental operation.

The results of realization of the comprehensive plan during all these years show high effectiveness of this form of creative coordination between the scientific institutions and industry.

During this period the Leningrad organizations of Minmorflot have developed and introduced 579 studies with a confirmed economic effect of 25 million rubles. About 46 percent of the studies and more than 10 million rubles of economic effect have been achieved on the basis of the developments carried out and introduced by the creative teams of workers of TsNIIMF and the shipping organization.

The initiative of the Leningrad organizations of Minmorflot was approved by the MMF Collegium and the Central Committee Presidium of our union and was recommended for use in the other shipping organizations.

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## MARITIME AND RIVER FLEETS

### MARITIME SAFETY TRAINING/RESEARCH CENTER TO OPEN IN ODESSA

Moscow IZVESTIYA in Russian 27 Jan 84 p 6

[Article by A. Knop: "Suez Canal Simulated in Odessa"]

[Text] A decision has been made to create near Odessa a unique maritime navigation safety training-research center that will be the largest such facility in the USSR.

The Suez Canal will be "located" at a stretch of the reknowned Sukhoy Estuary. Man-made fills, depths, beacons, and navigation buoys will recreate the most complex segments of this extremely difficult route. Three captains take their places on the bridge, or more precisely in the self-propelled model of an oceangoing vessel, reduced to the scale of a cutter. A training run begins. The control of the model copies exactly the operation of the vessel under actual conditions. The Black Sea captains who have gone through similar training at the International Center for Maritime Navigation near Grenoble, France, say that even real psychological stress is felt--no less than that felt under the actual "peak-load" situation. The only difference is that in the "game situation" the "nervous stress-miscalculation-accident" chain does not end in human victims and tremendous material loss.

This is the picture that will come to life in the Sukhoy Estuary near Odessa in the next year or two. The dieselship Lesozavodsk will be permanently stationed here by next summer. After serving its time as a cargo transport and visiting nearly al the oceans and seas of the world, now, as fate and Minmorflot [Ministry of the Maritime Fleet] have willed it, the Lesozavodsk is being transformed into a one-of-a-kind ship.

In contrast to the French training center, the Soviet center is to be more universal, that is, intended not only for ship captains. Here the mechanics and seamen, engine operators and electricians, and, in general, the representatives of all the maritime professions will be exposed to "the most extreme conditions." Under the guidance of experienced instructor-captains they will be able to sharpen their ability to fight for the safety of the crew, cargo, and ship in special compartments of the Lesozavodsk, where at any moment a fire may break out or the vessel may start to sink.

The reconstruction plans call for creation on board the ship of particular basins, chambers, classrooms, and cargo handling simulators. The center has still another task of a scientific nature. A research laboratory is being organized. The first phase of the maritime safety center will be put into operation this fall.

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## PORTS AND TRANSSHIPMENT CENTERS

### PROFILE OF RIVER FLEET MINISTRY'S PODVODRECHSTROY ADMINISTRATION

Moscow RECHNOY TRANSPORT in Russian No 12, Dec 83 pp 2-6

[Article by S. Klad'ko, chief of the Podvodrechstroy [Moscow Administration of Underwater Engineering and Construction Operations of the RSFSR Ministry of the River Fleet]: "In a Unified System of River Workers"]

[Text] A large detachment of underwater construction workers is working successfully at many construction sites of river transport, contributing to the consolidation and development of its material and technical base. This includes the construction of river berths in regions of the Far North, Siberia and the Far East and in the lower courses of the Volga, the installation of inverted siphons across rivers and water storage basins, and the construction of slips and industrial and residential buildings.

In November this year, the collegium of the MRF [Ministry of the River Fleet] approved a decision in which measures were outlined for further consolidation of the material and technical base of the Podvodrechstroy, with the aim of increasing its role in developing the construction of river transport projects and in providing for ship-raising and emergency and rescue operations on inland waterways.

The Podvodrechstroy collective is striving to continue the traditions of the underwater workers of the EPRON [Expedition for Special Underwater Operations], the 60th anniversary of which is being observed this December. The oldest specialists are meeting with the youth and passing on their experience.

On 17 December 1923, an order was signed creating the Expedition for Special Underwater Operations (EPRON), which began searching for sunken ships and raising them. In the 1920's, dozens of ship-raising operations were carried out, many seagoing and river ships were returned to the young Soviet Republic, and thousands of tons of metal and other materials were recovered from sea and river bottoms.

At this same time, underwater engineering operations were under way at different national economic projects in the country. With the participation of the EPRON workers, the Dneproges [Dnieper Hydroelectric Power Station], berths, wharves and water intakes were built in Nikolayev, Odessa, Dnepropetrovsk, Sevastopol, Yalta, Novorossiysk, Tuapse, Batumi, Baku, on Lake Baykal, in

Murmansk, on the island of Dikson, on the Volga, Neva, Dnieper, Ob and Yenisey rivers and in other regions where socialist industry was being developed at a rapid rate. The EPRON subunits carried out orders for many people's commissariats and departments. In 1930 the services of EPRON were noted by a high government award--the Order of the Red Labor Banner.

In the 1930's, EPRON's sphere of activity was expanded. The Central and Northwest expeditions of rivers and seas was established in 1931, and the Moscow Department of EPRON was established in January 1932. This was the only organization in the country performing ship-raising, emergency and rescue, diving, underwater construction and the other operations. In the prewar years, subunits of EPRON laid water-supply inverted siphons and communications cables in Moscow and Leningrad, a fuel oil pipeline was laid in Astrakhan, cables were extended across rivers in Eastern Siberia, and a sewage disposal line was laid across the Volga in the Mari ASSR; a water intake was built on the Kama for the Krasnokamsk Paper Combine, the largest in the country; an oil pipeline was extended across the Tatarskiy Strait from the island of Sakhalin to the continent; and a large number of oceangoing tankers were led up the Volga.

At the start of the Great Patriotic War, the River Emergency and Rescue Administration of the USSR Naval Forces (RASU VMF) and the Central Military Restoration Administration of the USSR People's Commissariat of the River Fleet (TsVVU NKRF) were established on the basis of EPRON for operations on rivers and lakes. They took part in combat actions and to the extent that liberation made it possible, restored the river transport economy destroyed by the German fascist invaders. The first (Krasnoslobodsk-Stalingrad region), second (Kamyshin-Dubovka region), and the third (Petropavlovka settlement) emergency and rescue detachments of the TsVVU NKRF were organized on the Volga; they cleared the channels of sunken ships, recovered military materiel and ammunition from under the water, and took part in the direction of crossings and clearing mines from waterways. By 1942 they had raised 10 sunken ships under enemy fire.

The underwater workers of the Stalingrad detachment, who worked in the very heat of battle, distinguished themselves especially in this difficult time.

In 1943 the detachments became part of the Volga Military Flotilla, and they raised 114 vessels sunk in the course of the fighting (38 self-propelled, 11 liquid-cargo, 48 dry-cargo, 17 others) on the Volga, 130 vessels on the Don, and more than 100 vessels on the Dnieper.

In 1944, in connection with the tasks set for recovery of the national economy, the RASU VMF, which was transferred to the USSR Narkomrechflot [People's Commissariat of the River Fleet] and renamed the GVRU [Main Administration of Military River Transport], engaged in the restoration and laying of new underwater supply lines in all our country's water basins, in addition to the ship-raising.

After the end of the Great Patriotic War, GVRU subunits continued to clear the main waterways and restored supply lines that had been destroyed on waterways. Structures of the White Sea-Baltic and Dnieper-Bug canals, the Dneproges, the ports of Kiev, Rostov and Stalingrad, and other important projects were restored with their assistance. The heroic deeds of the underwater specialists before and during the war, their selfless labor, and the very highest patriotism and love for their occupation have added glorious pages in the annals of the labor glory of the country's river workers. The names of underwater worker organizers and foremen A. G. Khramov, Sh. Kh. Krits, S. D. Sobolev, I. A. Senyukhov, K. Ya. Gorguraka, F. G. Zelinskiy, G. P. Chub, A. A. Orlov, I. P. Fomin, P. N. Nikol'skiy, I. I. Topal, L. D. Troshchenko, P. D. Matsuta, A. I. Veretekhin, P. N. Kobylkin, N. Kh. Kesopulo, B. P. Arkhireyev, T. S. Leybovich, D. P. Tul'ba, G. M. Chernikov, V. I. Ul'yanichev, S. Ya. Shakh, I. M. Lavrov, D. M. Paramonkov, A. A. Kuznetsov, F. K. Vas'ko and many others will always be an example for future generations.

Today the work and traditions of the underwater construction workers are being continued by the many thousands in the collective of the Administration of Underwater Engineering and Construction Operations (Podvodrechstroy), a specialized organization of the RSFSR Ministry of the River Fleet.

The administration has 13 expedition detachments of ship-raising, underwater engineering, emergency-rescue, construction and hydraulic engineering operations and two experimental plants for turning out industrial products and reinforced concrete structures. Podvodrechstroy operations range over practically the entire territory of the RSFSR and many regions of other union republics.

More than 6,000 persons work in the Podvodrechstroy--engineers, technicians, divers, machinists, riggers, workers of the navigation crews, onshore construction workers and installers. The detachments have their own base and auxiliary subunits, production sections, machine shops for repairing special equipment, housing, rest areas, and nursery schools.

While from 1945 to 1975 Podvodrechstroy and its predecessors performed operations valued at approximately 350 million rubles, in just the 10th Five-Year Plan and from 1981 to 1983, underwater engineering and construction operations were valued at more than 400 million rubles. At the same time, principal attention has been devoted to consolidating the material and technical base of river transport, the construction and renovation of the enterprises and organizations of steamship lines, basin waterway administrations and canal administrations.

In the 1960's, the administration built new sluices on the Moscow River, replacing the wooden structures built as long ago as the last century. This has made it possible to triple the throughput of the Moscow River water system and to ensure its reliability in operation. Important operations also were carried out in renovating projects of the White Sea-Baltic Canal.

In recent years the hoisting installations of the Akhtyubinsk, Blagoveshchensk, Gorodets, Krasnoarmeysk and other ship repair and shipbuilding plants and the Shipyard imeni Komsomol'skaya Pravda have been renovated. Capital repair operations are being completed on the Tobolsk plant and pamyati Dzerzhinskiy slips. Cargo and passenger berths have been and are being built in Moscow, Lesosibirsk, Krasnoyarsk, Blagoveshchensk and Khabarovsk, and on the Volga, Oka, Don and Moscow rivers and the Canal imeni Moscow.

Shoreline and industrial and civil construction holds an important place in the work of the Podvodrechstroy. Complexes of river fleet enterprises have been built on the Nagatinskaya floodplain in Moscow and Belyy Gorodok, where construction of the sector's largest welding shop is being completed. Projects of the Moscow River Tekhnikum and the GPTU [gas and steam turbine powerplant] in Podtesovo have been put into operation.

Much attention is being devoted to housing construction. In just the past 5 years, the families of river workers acquired more than 30,000 square meters of residential housing in Moscow, Kalach, Belyy Gorodok and Podtesovo.

Specialists of the 21st expedition detachment install dozens of portal cranes every year in ports and at industrial enterprises. In the 1976-1982 period, 426 cranes, about half of which are in the regions of Siberia and the Far East, including in ports under construction in Nizhnevartovsk, Urengoy, Sergino, Labytnangi and Nadym, were put into operation.

Renovation of guiding dolphins for hydraulic developments in the Seversk-Donetsk water system and strengthening of the banks of the Canal imeni Moscow are being continued. Renovation of the embankments of all hydraulic developments has begun with the aim of increasing the throughput of the Moscow River water system.

Ship-raising operations are carried out and assistance is provided for ships in distress by the expedition detachments every year.

With the aim of providing for the construction of river berths on waterways for RSFSR ministries and departments which are not included in the complexes of industrial enterprises' construction projects and are not related to the general-use ports, the RSFSR Ministry of the River Fleet has entrusted the Podvodrechstroy with these operations. The administration's collective has taken up this responsible mission as a vital task. Two specialized detachments of hydraulic engineering and underwater engineering operations have been organized in Gorkiy and Perm as part of the Podvodrechstroy.

The collective also is making its contribution to implementation of the USSR Food Program. In 2 years berths were built on the lower Volga for shipping vegetables and melons in Stupino, Zelenga and Semibugorye, a berth was built for mineral fertilizers in Kotlas, and a berth for unloading grain in Kineshma. Construction of berths for unloading vegetables at the Kuryanovskaya base in Moscow and the settlement of Nikolskoye in Astrakhan Oblast, and a berth for

reprocessing mineral fertilizers in the settlement of Lebyazhye on the Vyatka River have been begun. Preparation is under way to construct berths to process chemical cargoes in the Kama basin and for the transshipment of grain in Rybinsk.

In building berths for its clientele, the Podvodrechstroy employs the "prefabricated" method: the reinforced concrete pilings, anchoring installations and covering slabs are manufactured at Podvodrechstroy plants and are delivered to the project as a complete set. At the same time, it should be noted that the Podvodrechstroy reinforced concrete structures plant is not in a position to provide alone for the constantly increasing demands for components of berths and crane and slip beams. For this reason, we will have to organize production in the near future at one more plant of the Ministry of the River Fleet.

Expedition detachments are carrying out underwater engineering operations for the most important construction projects of the national economy and are taking part in building new industrial enterprises and in providing the population with water, heat, electricity and telephone communications. Thus, over the past 10 years about 500 kilometers of various types of pipeline and more than 600 kilometers of cable have been laid across water obstacles, and 346 water intakes, 174 dispersive river and sea drains, as well as approximately 7.5 kilometers of berth structures have been built.

The country's largest water intakes and drains were built for the Kama and Volga Motor Vehicle Plants, the Kostroma GRES [State Regional Electric Power Station], and Atommash, and deep-water dispersive drains have been built in Tallinn, Yalta and Pitsunda. For construction of the Yalta experimental-operational sewage drain to the sea, a group of specialists of the administration were awarded a USSR Council of Ministers prize both for the drafting of remarkable plans and the construction of enterprises, buildings and structures in accordance with these plans.

Experience has been accumulated by Podvodrechstroy specialists in laying central heating conduits 3 meters in diameter under water. Such structures have been built in Moscow and Kalinin. Owing to the perfected technology and the thorough work organization this year under conditions of sharp water level fluctuations, preparatory operations for laying a 3-meter conduit (by the towing method) across the Yenisey River in Krasnoyarsk are being completed.

The Podvodrechstroy collective is making a contribution within its powers in improving the municipal services of our motherland's capital. Many kilometers of engineering supply lines have been built across rivers in Moscow Oblast and the Canal imeni Moscow. Additional installations established at canal pumping stations have made it possible to significantly increase the delivery of Volga water for Moscow residents' water supply and for industrial enterprises, for water level control of rivers, and for navigation.

Extensive underwater operations are being carried out in building a complex of protective structures in Leningrad. For the first time in the USSR, a structure made of polyethylene pipe of domestic manufacture is being completed for a deep-water drain to the sea in the Arkhipo-Osipovka region.

The most important condition for improving the efficiency of construction operations is acceleration of scientific and technical progress and widespread and rapid introduction of the achievements of science, technology and advanced experience into production. The Podvodrechstroy is resolving the problems of engineering progress, creation of special machines and machinery, and introduction into production of new equipment and technology and advanced methods in creative collaboration with planning and scientific research organizations.

For a number of years the administration and its expedition detachments and industrial enterprises have had close ties with the Giprorechtrans [State Institute for Planning in River Transport], the Volgograd department of the GTsKB [State Central Design Bureau], the Institute of Arc Welding imeni Paton of the UkrSSR Academy of Sciences, the Rostov TsPKB [Central Planning and Design Bureau] of the USSR Ministry of the Maritime Fleet, and many others. The result of fruitful contacts has been the creation of a number of mechanisms and special installations for underwater processing of soil, ship-raising, and mechanization of diving operations.

A plan for creating and introducing new equipment and advanced technology is developed every year by the administration. Its implementation produces an important economic gain. Thus, over the years of the 10th Five-Year Plan, by increasing labor productivity, reducing the production cost of operations and shortening construction periods, an economic gain of more than 1.8 million rubles was obtained. (This totaled 250,000 rubles in 1982.)

Podvodrechstroy rationalizers annually submit 350 to 400 proposals, the introduction of which provides a significant economic gain. Thus, in 1982, as a result of the introduction of a rationalization proposal by specialists of the third detachment for changing the procedure of working the underwater part of the foundation area in modernizing the slip of the Navashinskiy Shipbuilding Plant, an economic gain of 86,000 rubles was obtained. The casing developed by specialists of the seventh detachment for driving reinforced concrete piling in building a berth on the Volga made it possible to save 29,000 rubles.

Among the best rationalizers of the administration are P. S. Yatsun and P. P. Prosolin (Leningrad), V. V. Kvasnikov and A. P. Fetisov (Rostov-on-Don), V. M. Gutov (Moscow), I. I. Klenovitskiy (Volgograd), and Yu. P. Mironov and V. I. Morozov (Sochi).

Extension of the work method in accordance with brigade cost accounting is being continued. In 1982, 76 cost accounting brigades were organized. The construction and installation operations which they carried out made up 12.2 percent of the overall annual program. In 1983, about 1,000 workers were covered by this progressive form of labor organization.

More than 2,000 shock workers of communist labor are working in the Podvodrechstroy. Subunits of the administration continuously hold prized places in the republic socialist competition among collectives of the Ministry of the River Fleet. Many Podvodrechstroy employees have been awarded government decorations and several administration specialists have been granted the honorary titles of Honored Construction Worker of the RSFSR, Honored Worker of the River Fleet, Excellent Worker in River Fleet Socialist Competition, and Best Rationalizer of the Ministry of the River Fleet; 245 persons have been awarded medals of the USSR VDNKh [Exhibition of Achievements of the National Economy] for results of the exhibit "Progressive Methods of Production in Underwater Construction Operations" organized in 1982-1983.

Among the best workers of the administration are divers V. V. Basalayev, N. V. Boyko, Yu. P. Katrich, M. I. Lyalyakin, N. I. Oliferenko, V. O. Postavnev, G. A. Solomin, S. M. Sorokin and V. Ye. Timchenko; machinists P. M. Belyayev, Ye. M. Vinogradov, V. I. Vysochin, V. T. Zemchenko, A. S. Deltuvas and Ye. A. Safonov; installers F. P. Akulov, A. M. Komarov, G. V. Skovoroda and P. P. Shishkov; arc welders A. I. Deulin, V. A. Grigor'yev and A. S. Pershin; riggers Yu. F. Zalutskiy and M. V. Nesterenko; painter A. I. Filippov; and crane operator N. A. Bykova.

Systematic work is being conducted in Podvodrechstroy collectives to reinforce labor discipline, improve work conditions at projects, improve the quality of construction output, and economize material and fuel and power resources, in which party, trade union and other public organizations are taking an active part.

Much attention is being devoted to training specialists to perform underwater construction operations. An educational and training combine, in which personnel in the most widely used occupations--divers, welders, riggers--are trained, was built and is functioning through their own resources.

At the same time, the material and technical base of the Podvodrechstroy is not being consolidated at a sufficient rate. A severe shortage of construction machinery, floating cranes for building berths, barges, and special equipment for ship-raising is being experienced. It would be expedient to transfer to the administration one of the ship repair and shipbuilding plants in the European part of the country with the aim of specializing it to turn out equipment for ship-raising and underwater engineering operations.

However, our available reserves also are not being utilized to increase labor productivity, improve the organization and quality of operations, and expand the sphere of activity among subunits of the Ministry of the River Fleet. The Podvodrechstroy collective sees its basic task in the coming years as increasing the operations of inland waterways, particularly the construction of berths for clientele and the assembly and installation of crane equipment in ports and industrial enterprises.

And we are fully determined, on the basis of widespread socialist competition, to cope creditably with the tasks set to consolidate the material and technical base of river transport and to make a worthy contribution to implementation of the historic decisions of the 26th CPSU Congress.

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## PORTS AND TRANSSHIPMENT CENTERS

### HISTORY, ACTIVITIES OF TOGLIATTI PORT

Moscow RECHNOY TRANSPORT in Russian No 12, Dec 83 pp 10-11

[Article by V. Volkov, director of the port of Togliatti: "On a Firm Basis"]

[Text] In the mid-19th century a landing was established on the left bank of the Volga at Stavropol for shipping wheat. It was an unequipped bank with a ramshackle platform. The working hands of loaders and barge haulers were the basic means of mechanization.

Workers of the landing took an active part in the revolutionary movement on the Volga and the conflict with the White Guards during the civil war. They contributed to development of the national economy over the years of the first five-year plans, fought the fascist occupiers during the Great Patriotic War, and restored the national economy in the postwar years.

The Stavropol landing was given significant development at the beginning of the 1950's in connection with construction of the Volga GES [Hydroelectric Power Station] imeni V. I. Lenin. Cargoes were shipped through it for the vast construction project, as well as for enterprises of the chemical, machine building and electrical engineering industries. Under difficult conditions, the passage of ships and rafts was accomplished through the hydraulic development still under construction. By 1958, the landing had grown into a port. In 1964 the Stavropol port was renamed the Togliatti port.

The basic stages in the port's development: in 1957 the berth partitions and inclined embankment of a cargo area and a passenger terminal were put into operation; in 1960 the cargo area was equipped with crane machinery; in 1971 another three berths with a total length of 310 meters were put into use; in 1972 a passenger terminal with a 100-seat restaurant was built; in 1976 railroad tracks were laid to the new berths; and since 1981 inclined berth No 7 has been rebuilt into a vertical partition.

In 10 years it grew into a first-category port and became one of the large transshipment ports of the Volga basin. In 25 years the shipment of cargoes increased by 3.4 times as much, cargo turnover increased by 4.1 percent, and the volume of loading and unloading operations were increased by 240 times as much. At the same time, the labor force of the port increased by only 1.9 times and the value of fixed production capital increased by 6.5 times as much and now exceeds 20 million rubles.

The port was developed and operated most intensively from 1968 to 1983. During this period fall 80 percent of the shipments and 86 percent of the total volume of the processed cargoes in 25 years. At the same time, nearly all the increase was achieved through an increase in labor productivity based on the employment of highly productive equipment, assimilation of progressive technology, introduction of advanced labor methods, creation of enlarged complex brigades, operation of berths on the best schedule, labor collaboration and competition with associated forms of transport, and operations by the hydraulic complex and the fleet in accordance with unified group plans. This has made it possible to significantly increase labor productivity and the intensiveness of loading and unloading operations and to accelerate the preparation of rolling stock.

In 25 years labor productivity at the port in loading and unloading operations was increased by 5.3 times as much, and in shipments by more than 4.6 times as much, and the time for preparing the fleet was reduced by 1.9 times as much. Owing to this, in just the last 10-year period, 6.37 million tonnage-days [tonnazhe-sut] and 46,500 railway car-hours were saved. And for 2.5 years of the the 11th Five-Year Plan 1.07 million ton-days were saved, which has made it possible to release for all navigation for additional shipments the motor ship of the "Volgo-Don" type.

The port workers made an important contribution to construction of the Volga Motor Vehicle Plant and its residential area. Equipment from Italy and other countries came to the port in ships used for combined "river-sea" navigation, and the Turin-Togliatti line was organized. Prefabricated reinforced concrete for building houses arrived from Moscow. Construction materials were brought in through the port by the river fleet. In all, 75,000 tons of heavy equipment and reinforced concrete and about 7.5 million tons of construction materials were delivered for the plant's needs.

At this time, the port had to perform a fundamentally new kind of work: hydraulic mining and hydraulic unloading of sand and putting suction dredges and hydraulic reloader into operation. One of the first to master this technology was communist A. P. Kulyasov, a suction dredge commander.

From 1976 to 1980, shipments of imported equipment and other cargoes for a nitrogen plant under construction were made from ports on the Baltic and Black Seas by river transport. The port workers, construction workers and installers had to demonstrate a great deal of resourcefulness in unloading the heavy, outsize columns and absorbing apparatus which weighed up to 300 tons and more.

In serving urban enterprises, the port also provides transportation links with many oblasts in the country and foreign countries and takes part in combined shipments of cargoes jointly with other forms of transport.

The port has the necessary berth front with depths sufficient to accommodate all types of river cargo ships and ships used for combined "river-sea" navigation, as well as certain types of oceangoing ships. It consists of the central area, the cargo sector for extracting the sand, berths for industrial enterprises, a passenger terminal with stopping points situated along both banks of

the water storage basin for a distance of about 100 kilometers. The port's territory has adequate open warehouse areas for storing accumulated cargoes, equipment and containers, as well as enclosed warehouses for keeping packaged and individual items of cargo. To provide for transshipment of freight from rail to water transport and vice versa, developed cordoned [prikordonnyye] and logistical railway shunting tracks lead into the port.

In the port's overall cargo turnover, outgoing shipments constitute 64 percent, which defines it as cargo-generating. About 26 percent of the outgoing cargoes and 48 percent of the cargoes being processed are made up of cargoes transshipped from the railroad to water transport and vice versa. This applies to Kuznetsk hard coal for the TETs [heat and electric power stations] of Moscow and Leningrad and the cupric pyrite [sernomednyy kolchedan] from the Urals for non-ferrous metallurgy enterprises in the northwest RSFSR and the Ukraine, and mineral and building materials transshipped from the water to the railroad, as well as building materials, parts and panels for houses and other reinforced concrete items for industrial and residential construction, machines and equipment for industrial enterprises, heavy containers, spare parts and complete sets of items for passenger cars which are transported directly by water. Passenger cars from the Volga Motor Vehicle Plant are shipped in a specialized vessel.

The port has a sufficient number of portal cranes of various hoisting capacities to carry out transshipment operations and is equipped with mechanization facilities within the port.

Loading and unloading operations are carried out by an enlarged, multiple-skill complex brigade of port workers under the leadership of communist G. M. Fokeyev. Each one is a skilled longshoreman who possesses several combined specialties.

Births for clients also have been substantially developed over the years, especially those for the Zhigulevsk Building Materials Combine and quarry administration, which has made it possible to significantly increase the volume of cargoes in ships.

Passenger transportation has been developed at the port along with cargo shipments. The frequency with which high-speed vessels depart for Ulyanovsk, Kuybyshev, Cheboksary, Kazan and Brezhnev has been significantly increased, and new high-speed lines between Togliatti and Cheboksary and Togliatti and Brezhnev, as well as the suburban high-speed Togliatti-Podvalye line which serves the rural population on the right bank, have been opened. Passenger transportation has increased by nearly 5.2 times as much in 25 years.

One can take a trip from the Togliatti port to all the large cities on the Volga, Kama, Don and other rivers in the European part of the country, as well as to the capital of our motherland, Moscow.

The coordinated, industrious collective of the port was shaped and trained under the leadership of party and trade union organizations. Many veterans are working with us, such as V. I. Lapin, P. P. Brazhkin, N. V. Barinova, V. Ya. Varfolomeyev, B. I. Yermakov, A. I. Yermakov, A. A. Zykova, A. V. Zolotenkov, G. Kh. Zagidullin and B. I. Talanov. More than 40 percent of the women are working. They are cooks, drivers, standby captains, crane operators, acceptance checkers, dispatchers and shift assistants to the terminal chief. Equally with the men, they are conscientiously carrying out difficult fleet service.

Family labor dynasties have taken shape, such as the Gabitov, Kostikov, Yermakov, Tikhonov, Semikov, Makhotin, Kraynov, Makarov, Yedakov and Davydochev families.

In the vanguard of the collective are 115 communists and 74 Komsomols, 193 shock workers of communist labor and 580 persons who are competing for this high rank--this is a great motive force.

Competition has been developed among the ship crews and shore workers for fulfillment of the plan for 3 years and the 11th Five-Year Plan as a whole ahead of schedule.

The port, the "Zhigulevskoye Morye" railway station and the cargo vehicle depot are working in accordance with the experience of the Leningrad transportation hub.

In accordance with the results of the All-Union socialist competition among the country's transport hubs in 1982, the port was awarded an AUCCTU diploma and a monetary bonus. For results of work in the first quarter of 1983 in republic competition, it was awarded second place among ports of the Ministry of the River Fleet, and in the second quarter, first place among transport enterprises of the Komsomolskiy Rayon of our city.

In marking the 25th anniversary of the port's founding, its collective has successfully coped with the tasks of the third year of the 11th Five-year Plan, having fulfilled them ahead of schedule for all indicators. In actively taking part in competition to complete plans for 3 years of the five-year plan ahead of schedule, which was initiated by the crew of the diesel-electric motor ship "Shlyuzovoy-120" led by communist N. I. Pyatayev, the collectives of the port fleet, the Zhigulevsk and Yablonevyy ravine landings, of the cargo sector, of the suction dredge "Portovyy-525," of the central cargo area, and the machine repair shop have achieved excellent results.

Having assumed its labor duties, the collective is directing all its efforts to successfully fulfill the five-year plan, accelerate processing of rolling stock, and meet the requirements of enterprises and the population of the oblast for transportation to the maximum extent.

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